Changes in the management environment and practices of small-scale farmers from 1994 to 2001

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Declaration of independent work

I, Lefu Tefo Maphalla, hereby declare that this research project submitted to the Technikon Free State for the awarding of the degree MAGISTER TECHNOLOGIAE: AGRICULTURE is my own independent work that has not been submitted previously to any institution by me or any other person for the attainment of a qualification.

…… ……..……

Signature of student Date

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SUMMARY

CHANGES IN THE MANAGEMENT ENVIRONMENT AND PRACTICES OF SMALL-SCALE FARMERS FROM 1994 TO 2001

The objective of the study was to analyse the changes that took place in the small-scale agricultural management environment (external and internal) from 1994 to 2001 in the Free State Province and to associate these changes with the management performance of the farmers within this same period. External management environment refers to economic, physical (natural), trade, technological, social and political environments, while internal management implies biographic characteristics of the farmer, as well as land, capital and personnel. Fifty small-scale farmers geographically located throughout the province in the three main farming categories, namely crop production, livestock production, and mixed farming, were randomly selected.

Data were collected using a questionnaire containing closed as well as open-ended questions. Both the chi-square and t-tests were used to analyse the data.

The study found that no significant changes took place in the external small-scale management environment, with the exception of the social environment (collaboration) where small-scale farmer collaboration with the commercial counterpart increased significantly ($P<0.01$) from 30% in 1994 to 76% in 2001.

In the internal small-scale management environment, significant changes took place in the following areas: crop and livestock production, mechanisation, labour management, financial management, and marketing.

Compared to 1994 there was a 24% (X^2 $P<0.01$) improvement in the number of farmers claiming to “know” their soil potential in 2001. There was also a significant change in the number of farmers who always analyse their soil before planting ($X^2=4.750$ with 1 df $P<0.05$). Another significant trend was with regard to pest control, with more farmers ($P<0.05$) controlling pests in 2001 than in 1994.

With regard to livestock production, there was a significant improvement ($X^2 = 3886$ with 1 df $P<0.05$) from 1994 to 2001 in the number of farmers following an immunisation programme.

From 1994 to 2001 the number of farmers with tractors increased significantly (58% vs. 68% $P<0.01$). Again, there was a significant increase of 18% in implement ownership among farmers ($X^2 <0.01$).

In terms of labour management 17% more respondents signed service contracts with their employees (11% in 1994 vs. 28% in 2001). The change was significant ($P<0.05$).

With regard to financial management there was a statistically significant improvement in the number of farmers keeping balance sheets in 2001 compared to 1994 (30% in 1994 vs. 54% in 2001). Fifty-four percent of farmers drew up enterprise budgets in 2001, compared to 46% in 1994 ($P<0.05$). More farmers (46%) compiled income statements in 2001 than in 1994 (32%) ($P<0.05$). This was also the case with cash-flow statements.

In respect of marketing, there was a significant change in the area of market projections. A greater number of farmers (40%) performed market projections in 2001 than in 1994 (20%) ($P<0.05$).

In general, the performance index of the farmers improved in 2001 in comparison to 1994. This could be attributed to, amongst other things, the use of experts in the case of financial matters. In the areas where no significant change took place it was apparent that the farmers had experienced problems, particularly where money was involved, for instance in the purchasing of production inputs like pesticides and medication.

OPSOMMING

VERANDERING IN DIE BESTUURSOMGEWING EN PRAKTYKE VAN KLEINSKAALSE BOERE VANAF 1994 TOT 2001

Die oorhoofse doelstelling van hierdie studie is om die veranderinge wat in die kleinskaalse boerdery bestuursomgewing (ekstern en intern) vanaf 1994 tot 2001 in die Vrystaat plaasgevind het te analiseer en om hierdie veranderinge in verband te bring met die bestuursprestasie van die boere gedurende dieselfde periode. Die eksterne bestuursomgewing verwys na ekonomiese-, fisiese- (natuurlik), handels-, tegnologiese-, sosiale- en politiese omgewings, terwyl interne bestuur biografiese karaktereienskappe van die boer impliseer, sowel as grond, kapitaal en personeel. Vyftig kleinskaalse boere vanuit die drie hoof boerdery-kategorieë, naamlik gewasproduksie, lewendehawe produksie en gemengde boerdery, is ewekansig vanuit die provinsie as steekproef geselekteer.

Data is ingesamel deur gebruik te maak van ‘n vraelys wat voorafgekodeerde sowel as oop-end tipe vrae bevat het. Beide die chi-kwadraat en t-toetse is gebruik om die data te analiseer.

Die studie het geen betekenisvolle veranderinge in die eksterne kleinskaalse bestuursomgewing gevind, met uitsondering van die sosiale omgewing waar kleinskaalse boere se samewerking met die kommersiële eweknieë betekenisvol verhoog het ($P<0.01$) vanaf 30% in 1994 tot 76% in 2001.

In die interne kleinskaalse bestuursomgewing het betekenisvolle veranderinge in die volgende areas plaasgevind: gewas- en lewendehawe produksie, meganisasie, arbeidsbestuur, finansiële bestuur, asook bemarking.

In vergelyking met 1994 was daar ‘n 24% ($X^2P<0.01$) verbetering in die aantal boere wat beweer dat hulle in 2001 grondpotensiaal kan beraam. Daar was ‘n betekenisvolle verandering in die aantal boere wat altyd hulle grond voor plant laat ontleed ($X^2$4.750 met 1 vg $P<0.05$). ‘n Ander betekenisvolle neiging is in verband met plaagbeheer, met meer boere ($P<0.05$) wat plae beheer in 2001 as in 1994.

Met betrekking tot lewendehawe produksie, is daar ‘n betekenisvolle verbetering ($X^2 = 3886$ met 1 vg $P<0.05$) vanaf 1994 tot 2001 in die aantal boere wat ‘n immuniseringprogram volg.

Vanaf 1994 tot 2001 het die aantal kleinskaalse boere met trekkers betekenisvol toegeneem (58% vs. 68% P<0.01). Weereens, is daar ‘n betekenisvolle verhoging van 18% in die eienaarskap van implemente onder boere (X^2 <0.01).

In terme van arbeidsbestuur het 17% meer respondente dienskontrakte met hul werknemers gesluit (11% in 1994 vs. 28% in 2001). Die verandering is betekenisvol by 'n 95% toetspeil.

Met betrekking tot finansiële bestuur is daar ‘n statistiese betekenisvolle verbetering in die aantal boere wat balansstate opstel in 2001 (54%) in vergelyking met 1994 (30%). Vyf-en-vyftig persent van boere trek vertakkingsbegrotings op in 2001, in vergelyking met 46% in 1994 (P<0.05). Betekenisvol (P<0.05) meer boere (46%) het inkomstestate opgestel in 2001 as in 1994 (32%). Dit was ook die geval met die kontantvloeistate.

Met betrekking tot bemarking, is daar ‘n betekenisvolle verandering op die gebied van markvooruitsigte. Betekenisvol (P<0.05) meer boere (40%) het markvooruitskouings gedoen in 2001 as in 1994 (20%).

Oor die algemeen, het die prestasie indeks van boere verhoog in 2001 in vergelyking met 1994. Dit kan toegeskryf word, aan onder andere, die gebruik van deskundiges in finansiële sake. In die areas waar geen betekenisvolle verandering plaasgevind het nie, was dit duidelik dat die boere probleme ondervind het, veral waar geld betrokke was, byvoorbeeld in die aankoop van produksie-insette soos insekdoders en veemedisyne.

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Preamble

This report comprises five chapters. The first chapter is a general introduction that gives the background to the study and details the importance of the study. Chapter two is a literature review, which gives the background to what the literature says regarding changes in the management environment. Chapter two mainly discusses external and internal management in the small-scale farming environment and reviews the current development in these environments.

Chapter three presents the materials and methods used in the study. It discusses study site or location and gives a description of the target farmers and sample selection, the questionnaire development and data collection methods used, as well as the statistical methods used to analyse the data. Chapter four presents results and discussions, while chapter five, which is the final chapter, gives the conclusion and recommendations.

CHAPTER 1

GENERAL INTRODUCTION

1.1 GENERAL OVERVIEW OF THE MANAGEMENT ENVIRONMENT OF THE SMALL-SCALE FARMER

Prior to the advent of the democratic dispensation in 1994, small-scale farmers were mainly farming on unwanted land in the reserves and as a result the situation made it difficult for them to go commercial. Financial institutions were not keen to assist them in terms of loans. Lately, however, there has been a paradigm shift towards such farmers, and their situation is being viewed in a different light.

Small-scale farmers have in the past been managing their enterprises, albeit on a small scale. The phenomenon of management is thus not new to them. They had their own way of managing their enterprises, even though it might not be obvious how well this way worked. In this context, the concept “small-scale farmer” refers to “a resource-poor, emerging, historically disadvantaged person”. This definition does not consider the size of the farmer’s holding. The farmer’s main aim is to commercialise his/her enterprise(s).

Since 1994 there have been drastic changes in South Africa (SA), and the agricultural industry has not been immune to them. Some of these changes have impacted enormously on farming practices and strategies and have necessitated certain adjustments. Most of these changes are taking place in the farmer’s external management environment, which is an environment over which the farmer has no influence but which in its turn exerts a certain degree of influence on the farming enterprise. While the previous government focused on the commercial, primarily white agricultural sector, the new government is focusing on the newly emerging, mostly black farmers (Department of Land Affairs, 1997).

1.1.1 Land and institutional support of the small-scale farmer

In the past black people had no legal right to own land, and as such it was difficult for them to secure funds for their farming operations. The land was generally registered as the property of the government or the South African Development Trust. In many areas the administration of this land was inefficient and chaotic, and people who had lived on a particular piece of land for generations suddenly found that they had no legal right to the land in question (Department of Land Affairs, 1997; Fenwick & Lyne, 1999).

This prompted the Minister of Agriculture and Land Affairs to introduce new policies for the distribution of land. The government is seeking to redistribute 25 million hectares or 30% of the agricultural land over a period of 15 years (Van der Merwe, 2001). This initiative involves land restitution under the Restitution of Land Rights Act and the Land Reform (Labour Tenants) Act; the distribution of state land to the poor; and the acquisition of additional land to redistribute to the poor in terms of the pilot programme and grant structure proposals (Kirsten, Van Rooyen & Ngqangweni, 1998; Farlam, 2001).

According to Ramakarane (2002 – personal communication) the Commission on the Restitution of Land Rights has so far settled 29 877 claims out of a total of 68 878 that had been lodged. Altogether 332 243 individuals representing 62 245 households have benefited from a total of 430 988 hectares. In real terms this is a minuscule amount of land and could do little to address the acute shortage of land experienced by small-scale farmers. Of this land, only a minimal amount would probably be utilised for farming purposes, since the bulk of it would be utilised as residential areas and for other purposes. In addition, according to Masiteng and Van der Westhuizen (2001), the infrastructure used by the newly settled farmers on this and other state land is poor.

Political events that prevailed in the years leading up to 1994 such as political violence and the negotiated settlement between the former government and its former political enemies, which culminated in the first democratic election, gave increased relevance to the issue of redistribution of wealth and land in South African society. A contentious issue is how to go about achieving an equitable redistribution of wealth whilst at the same time satisfying the demands of a growing and healthy economy on a sustainable basis (Van Schalkwyk, Van Rooyen & Jooste, 1994).

The new wave that is sweeping the country has to be taken seriously and addressed properly, as it could have serious repercussions – especially in agriculture – in the form of the killing of farm owners, the eviction of farm labourers, and groups of people demanding land from the government. “The whole region of the Southern African Development Community (SADC) and its free trade agreements are being jeopardised by events in Zimbabwe” (Willemse, 2000a). Farmers are being evicted from their farms unlawfully and without compensation, in a climate of political uncertainty.

South Africa as a neighbour is the first to feel the effects of what takes place in Zimbabwe. South African agriculture has no choice but to empower its emerging farmers if a similar situation is to be avoided. According to Van Zyl (1997) the empowerment of thousands of black farmers was first mooted to commercial agriculture about five years ago, shortly after the country’s first democratic elections.

It is a known fact that land, especially arable land, is one of the scarcest commodities that this country possesses; thus the available land should be utilised profitably. This means that the land should produce enough food and fibre for domestic needs and for the export market, since this country benefits greatly from its export market. The small-scale farmer has been synonymous with subsistence farming, i.e. farming to produce enough food for consumption with little or nothing left to sell. Given the shortage of land experienced in this country, this is clearly not the correct approach. “Traditional farming does not pay” (Verschoor, 1998).

De Villiers (1997) states that in South Africa white farmers are responsible for more than 90% of the commercial farming. On the other hand, black farmers are responsible for more than 90% of the subsistence farming, producing enough for their own household needs with only small quantities (in the better seasons) left to sell.

There have been a number of success stories of small-scale farming on some parts of the African continent, which shows that the situation is not entirely unique to South Africa or to our times. Small-scale farmers all over the SADC are rapidly entering the market economy and are highly responsive to the changes. Thus, just like in any industry, the transformation in production technology and productivity necessary to achieve high small-scale agricultural growth will take place, given time and the correct incentives (Rwelamira & Kleynhans, 1998).

What appears to be a major issue surrounding the success or failure of small-scale farmers is whether there is enough support given to such farmers. The challenges facing the small-scale farmer seem to have been underestimated. Government, the private sector and the farmers themselves have underestimated the challenges facing the empowerment of emerging farmers (Franz, 2000). Van Zyl (1997) echoed these same sentiments when he asked, “Is agriculture serious about empowerment?”

Rwelamira and Kleynhans (1998) suggests areas that require serious attention. He is of the opinion that the technical and institutional preconditions for high agricultural growth, in both the commercial farm sector and the small-scale sector, lie with the following factors:

- Technological innovations: new technology that is produced by long-term public and private investments in agricultural research and by biological and physical capital investments.
- Institutional innovation: an efficient system of farmer support institutions, both public and private, to disseminate improved technology to farmers and to market agricultural inputs.
- A favourable economic policy environment, including the creation of expectations among farmers that it will be profitable for them to invest their family labour in capital formation through land improvements (Rwelamira & Kleynhans, 1998).

Fourie (1996) concurs by stating that small-scale farmers also depend on the export market for income, and therefore investment in rural infrastructure must be maintained despite budgetary constraints.

1.1.2 Sources of finance for the small-scale farmer

The financial uncertainty in world markets has a direct impact on South African farmers and on the viability of their farming activities (Willemse, 2000b). The small-scale farmer in particular is in an even more precarious situation, because compounded to the above are the changes to the criteria for financing. The traditional collateral requirements have been replaced with the repayment capacity of the applicant, which implies that other financial statements have to be compiled – something with which most small-scale farmers are not familiar.

Since small-scale farmers have all along been shunned from mainstream agriculture, this has put them in a very difficult position, as they have never been given a chance to be exposed to dealings with financial institutions.

There has been a decline in the agricultural aid provided to farmers by the National Department of Agricultural (NDA). This relates to farming subsidies that farmers previously received from the NDA. The government is only prepared to assist in the event of a natural disaster such as drought or flood. Farmers are now expected to operate their enterprises professionally as business entities. Since farmers are not satisfied with the support provided by the department, the time has come for farmers to submit a comprehensive proposal to government for proper agricultural aid (Willemse, 2000b).

It is well known that there are many issues involved in financial intermediation. These centre on trust and security, institutional viability and transaction costs. Risk is inherent in all these factors. Lack of access to formal credit and to full financial intermediation services impedes the agricultural development of small-scale farmers. These issues need to be addressed urgently (Jordaan, 2003).

1.1.3 Training of the small-scale farmer

Education and training play a pivotal role in the development of every nation, community, organisation, industry and even individual. They are determinants of success or failure. Training is central to any development programme, since it is the axis on which the whole issue of development revolves. Given its importance, the type, intensity and approach used in training can determine or influence to a great extent the success or failure of any training programme. Just like in any industry, information plays a crucial role in small-scale farming, especially at this point in time. In their study Masiteng and Van der Westhuizen (2001) found that farmers regard training as a crucial element in the success of any farming business. But for training to be effective it has to be relevant and most importantly address the real needs of the people concerned.

For the small-scale farmer to benefit from training programmes, a significant change is needed in the educational approach to agricultural improvement. Small-scale farmers must be enabled to participate fully in the development process. They should be part of the planning process and decide on what they should be trained to do, etc.

They should be empowered to attain greater control over their livelihoods and the agricultural improvement processes (Phillips-Howard, 1994).

In many regions of the world, there is a pressing need to transform agriculture, both quantitatively to feed the growing population and qualitatively to preserve and sustain the natural resource base. The need for more food or increased production of food has prompted some to resort to producing more genetically modified foods. This has brought about concerns from other sectors for the safety of genetically modified food. Furthermore structural changes, which lead to diversification and increased market orientation, require farmers to have new skills and techniques in all elements of the production chain, both on and off the farm. Ongoing education, training, information and extension are therefore essential. Such services should be in the hands of farmers and be funded where possible by all parties involved, i.e. government, the private sector and farmers (Fourie, 1996).

Small-scale farmers are often blamed for the non-adoption of newly introduced technologies. They are labelled as stubborn and unwilling to change. The traditional “top down” approach to development strategy should be supplemented with farmers’ indigenous knowledge. The programmes encouraging the transfer of agricultural technology should include institutional support. Only through the identification of farmers` environmental and resource utilisation, preferences, socio-economic circumstances and constraints can a development programme of optimum meaning to farmers be devised and implemented with success (Phillips-Howard, 1994; Lanyon, 1994; Kolajo & Lungu, 1995; Lado, 1998).

The government seems to be willing to assist the small-scale farmer in this regard, but its policies do not seem to be thoroughly thought out, or it may be that it failed to consult with relevant bodies, as those policies have unintended consequences. This is reflected in the Department of Finance’s 1997/1998 budgets. This department had set aside funds for loans to “emerging farmers”. It also launched a “grant assistance scheme” to help small-scale farmers improve their efficiency through infrastructure and training. However, in the absence of direct state intervention, small-scale farmers are less likely to succeed in a “free market environment” (Mather, 1998).

1.1.4 Economic / trade environment of the small-scale farmer

While the state is trying to financially assist small-scale farmers on the one hand, on the other it is maintaining high interest rates with its macro-economic strategy, i.e. Gear. This severely limits the ability of small-scale farmers to borrow money and is compounded by their low and irregular income, which reduces their ability to save, borrow, and invest in agriculture. But at the same time it exposes them to the harsh realities of the free trade environment whereby they compete on an equal basis with well-established commercial farmers (Mather, 1998; Fenwick & Lyne, 1999).

Farming interest is undergoing profound change in all over the world. Structural adjustment programmes, the liberalisation and opening of markets, redirection in agricultural policy resulting from internal reform, or regional and international agreements, are affecting the way in which farmers are earning their income. The increased internationalisation of agriculture means more open borders and a greater exchange rate of commodities. The changes that affect agriculture have resulted from the abolishment of the marketing boards, together with labour legislation, the free-market environment with its accompanying risks for the farmer, and increased competition for natural resources, i.e. land and water (Fourie, 1996; Nell, 1996; Van der Merwe & Otto, 1997; Raath, 1997; De Villiers, 1997).

The new Marketing Act that became law on 2 October 1996 has the following four primary objectives:

- Broadening market access to all farmers;
- Improving the efficiency of marketing;
- Optimising export earnings; and
- Enhancing the viability of the agricultural sector.

How this Act will influence the course of events in favour of small-scale farmers is yet to be seen. The National Agricultural Marketing Council has been charged with the responsibility of measuring the performance of this Act in terms of the above-mentioned objectives (Willemse, 1996).

1.1.5 Research into the small-scale farmer, as well as extension services

In South Africa the national research system has all along been generally focused on generating technologies for large-scale farmers. This leaves behind the small-scale farmers who are often blamed for the non-adoption of technologies. Throughout the country the Department of Agriculture's extension services have proven to be quite ineffective due to high farmer-to-extension ratios and disparities in labour resource distribution among South African provincial districts (Chikanda & Kirsten, 1998). Masiteng and Van der Westhuizen (2001) state that small-scale farmers receive inadequate training and extension services support.

1.2 PROBLEM STATEMENT

In general, the above-mentioned factors indicate that the most intriguing question asks which management strategies a small-scale farmer must employ to ensure a sustained growth of his enterprise(s) and also to exploit the opportunities presented by these scenarios. Again these scenarios necessitate a study of their effects on the management environment and practices of the small-scale farmer. The implications are that there will always be changes in agriculture, especially at farm level.

1.3 OBJECTIVES OF THE STUDY

The general objective of the study is to analyse the changes that have taken place in the small-scale agricultural environment in terms of agricultural management at farm level, and to associate these changes with the management performance of farmers. This general objective is divided into two primary objectives, each with its own specific goals.

Objective 1

To identify the factors that have undergone change in the small-scale farming sector from 1994 to 2001, and to determine the extent of their relative significance.

Goals for objective 1

- To indicate how external environmental factors that have an impact on farmers' management processes have changed since 1994, and
- To determine the internal environmental factors involved, as well as the extent to which the effect thereof changed between 1994 and 2001.

Objective 2

To determine the performance index of small-scale farmers in respect of the time elapsed between 1994 and 2001, and to determine whether their management performance could be linked or attributed to certain factors or practices.

Goal for objective 2

- To determine whether there are meaningful differences between 1994 and 2001 in terms of the management practices of small-scale farmers.

1.4 HYPOTHESIS

Unfavourable conditions have highlighted certain shortcomings in the area of management, especially at farm level. With regard to small-scale farmers the following hypothesis can be proposed:

- The small-scale farmer is not free to act as he sees fit, since risk, tenure systems, labour, technology, funds and so forth limit his enterprise.
- Small-scale farmers are rapidly entering the market economy and are highly responsive to the changes.
- The transformation in production technology and productivity necessary to achieve high small-scale agricultural growth will take place, given time and the correct incentives.
- Small-scale farmers are poorly served by extension services with respect to the transfer of technology (TOT).

1.5 IMPORTANCE OF THE STUDY

The study has the following importance:

- It will highlight factors – most of which are probably beyond the farmer's control – that have an effect on the small-scale farming environment, and it will also make some recommendations on how to deal with those factors. This would assist small-scale farmers in terms of formulating or adjusting their farming strategies, and also policymakers in terms of formulating sound policies based on the real situation as perceived by the farmers.
- The study will reveal to service providers and all stakeholders the real problems and needs of small-scale farmers, enabling them to restructure their services, products, etc. in such a way that they meet the needs of the farmers.
- The study will also serve as a template in terms of determining the progress that has been made thus far with regard to the empowerment of small-scale farmers, as well as what still needs to be done.

CHAPTER 2

LITERATURE REVIEW

This chapter discusses the changes in the external management environment of the small-scale farmer, i.e. economic, technological, socio–economic, natural or physical, and politico-legal factors. These factors exert an influence on the management environment of the farmer while the farmer, on the contrary, has no control over them. This chapter also discusses the internal management environment of the farmer, which is an environment over which the farmer has some control. He directly or indirectly makes most of the decisions in this environment (indirectly through somebody appointed by him to act on his behalf). The internal management environment factors include biographic characteristics of the farmer, his management skills, and incentive for motivation, capital, land and labour.

2.1 EXTERNAL MANAGEMENT ENVIRONMENT OF THE SMALL-SCALE FARMER

Farming enterprises in South Africa have to operate in a dynamic and changing economic, technological and political business environment. The changing environment should, however, be managed in such a way that it will benefit the enterprise or minimise the negative effects of these changes. This implies that managers should possess skills to manage especially labour, marketing and financial issues facing the enterprise (Erasmus & Hough, 1995).

To be successful in this environment the farmer should always be well informed in this regard, since it is always changing. The farmer must be aware of the opportunities and threats in the external environment that affect his enterprise, so that he can restructure his farming enterprise in time to adjust to changes (Van Reenen & Marais, 1992). The external environment consists of all the conditions and forces that affect the strategic options and define the competitive situation of a business. Farmers are influenced by the external environment since nothing they can do will change the external environment and the impact it has on them (Heney, 1999).

2.1.1 Economic environment of the small-scale farmer

The government is probably the one organisation that has a dominant influence on the environment within which the enterprise lives and operates. Basically there are three groups of economic policy measures with which the farmer has to be reasonably familiar in order to determine the influence thereof on his farming operation, namely the monetary policy, the fiscal policy, and the general economic policy of the government (Van der Westhuizen, 1997).

- **Monetary policy**

Monetary policy is a deliberate attempt by the government to manage the money supply or the interest rate to achieve employment and income growth and to distribute objectives. Monetary policies are usually focused on limiting the expansion of the money supply and domestic credit availability and on increasing savings. It also refers to the rate at which money supply grows and the rate of interest. The aim of monetary policy is to promote price stability, economic growth, full employment and a stable balance of payments. In order to achieve this aim, the Reserve Bank tries to control money supply and influence interest and exchange rates (Starling, 1996; Fènyes & Meyer, 1998; Standard Bank SA, 1999).

The effect of expansionary monetary policy, i.e. increased government spending and decreased taxation, will reduce the interest rate, which will lead to an increase in the domestic demand for services and goods. With an increase in disposable income, there will be a greater demand for agricultural products, which could result in raised prices. A restrictive monetary policy, i.e. reduced government spending and increased taxation, will lead to an increase in the interest rate, which will result in a contraction of domestic demand and a decrease in prices (Standard Bank SA, 1999).

- **Fiscal policy**

Fiscal policy is the conscious attempt by government to meet employment, income growth and distribution objectives, amongst others, through its powers to tax and spend. Measures to reduce expenditure include decreases in explicit subsidies on food and other goods services; cuts in social programmes such as health care, education and direct income transfers; and efforts to reduce deficits in public sector enterprise. The fiscal policy affects the whole economy (Lipscombe, 1991; Fènyes & Meyer, 1998).

The governments' fiscal policy – which in the mid-1990s focused more on diverting resources to housing and infrastructure in disadvantaged communities and redistributing public health and education spending in favour of the poor – is now putting more emphasis on expanding the economy. While these initiatives will continue, the emphasis on fiscal policy now shifts to expanding the economy and broadening opportunities for ordinary people (Republic of South Africa National Treasury, 2001).

- **General economic policy**

Generally the government's economic policy aims at the following: adapting to global change, increasing competitiveness, improving the quality of spending, accelerating economic growth, and at the same time reducing inflation and stabilising prices.

The government has several policy initiatives aimed at reinforcing the broadening of economic opportunity, land reform, investment in rural development, and support for small businesses, which in due course will contribute to employment growth and income redistribution (Republic of South Africa National Treasury, 2001).

The state's role in this expansionary thrust is facilitative, i.e. it is setting up preferential trade agreements with large international trading blocks, it is assisting in opening new markets for exports, and it is encouraging greater regional economic integration in Southern Africa. It is also ensuring a stable exchange rate and is trying to contain inflation to provide the necessary stability for a concerted expansion of export industries. The second policy initiative to enable an outward-oriented economy involves removing a series of constraints, which, once removed, will catapult the economy to the higher levels of growth, development and employment necessary to provide a better life for all South Africans (Mather, 1998).

The general economic policy has several variables that serve to shape it, namely inflation, and interest and exchange rates. These variables are interwoven and each one of them influences the others and in turn is influenced by them.

- **Inflation**

Inflation denotes a rise in the general level of prices. The rate of inflation is the rate of change in the general price level from one year to the next. We measure the price level by constructing price averages of consumer prices.

Influence of inflation impedes a realistic profit and price determination, and capital is often drawn on. It is important for management to monitor the change (rise) in the cost of production factors, since this has a direct influence on its own price decisions. There are two main causes of inflation: One acts through supplies schedules and is known as *cost-push* inflation, while the second acts through *demand-pull*. Since demand can pull prices up and since many prices form part of suppliers' costs, it is very difficult to establish the primary cause (Downey & Erikson, 1987; Lipscombe, 1991).

Inflation affects farmers through cost-price squeeze margins between input costs, and producer prices become progressively smaller. This is due to input costs rising faster than producer prices or producer prices rising at a slower rate than input costs. In South Africa, inflation has been largely attributed to a non-economically motivated increase in wages and salaries in excess of increases in labour productivity. Since the agricultural sector derives a significant proportion of its inputs from the non-agricultural sector, inflation is easily passed on to the agricultural sector through these linkages (Fènyes & Meyer, 1998).

The economy experienced an increase in all measures of inflation in 2000, initially driven by increases in agricultural prices, but given further impetus by the 28% rise in international oil prices from January to November 2000. The nominal depreciation in the value of the rand, in addition to the effect of oil prices, also raised the prices of imported and domestically produced goods (Republic of South Africa National Treasury, 2001).

- **Interest rates**

An interest rate is the price of a particular sum of money (Lipscombe, 1991). The level of interest rate is determined largely by supply and demand of (money) funds. When the supply of money is greater than the demand, such as when funds flow into the country, interest rates tend to decline. If the demand for money is greater than its supply, interest rates tend to rise (Downey & Erikson, 1987).

In South Africa, regulated interest rates have been eliminated and replaced by the market-oriented approach. This change is said to have removed distortions in financial markets, thereby enhancing the prospects for the long-term development of a sustainable rural financial system (Jordaan, 2003). However, the question remains as to how this will benefit the small-scale farmer.

- **Nominal and real interest rates**

The rate of interest prevailing in the market is known as the nominal rate. When the annual rate of inflation is deducted from the nominal rate of interest we find the real rate of interest. The real interest rate refers to the lending rate (i.e. the rate that the Reserve Bank charges the banking sector) after taking inflation into account. If the inflation rate increases, so does the interest rate, and vice versa. The farmer can expect interest rates to rise when inflation rears its head (Standard Bank SA, 1999).

Table 2.1 Correlation between inflation and real interest rate[1]

Inflation	Nominal rate of interest (% p.a.)	Real rate of interest (% p.a.)
6	12	+6
8	12	+4
10	12	+2
12	12	+0
14	12	-2
16	12	-4
18	12	-6

[1]Adapted from Lipscombe (1991).

The Table above shows that if the inflation rate is low, i.e. from 6 to 10%, and the nominal interest rate is constant at 12% per annum, the real rate of interest is positive, and when the inflation rate rises above 10% and the nominal interest rate remains constant, the real rate of interest becomes negative.

Interest rates impact on agriculture in a number of ways. When interest rates are low they encourage farmers to purchase machinery and implements. On the other hand, when interest rates are high, they raise the cost of inventory as well as the cost of money. For example, if the interest rates rise, so does the return on off-farm interest-bearing assets. The opportunity cost of a herd investment (cattle numbers) therefore increases as the interest rate rises, resulting in a decrease in inventory (Boehlje & Eidman, 1984; Buckett, 1988; Fènyes & Meyer, 1998).

As far as capital is concerned, the return that accrues from each R1 that is spent is the criterion according to which the allocation of capital should be evaluated. Own and external capital, as well as physical capital, determines the capacity of the enterprise in terms of growth in most cases, since little can be achieved with limited capital. What this means to the small-scale farmer is that he must be kept informed regarding the capital needs of the farming operation, as well as the sources of finance, in order to ensure adequate capital of the right sort at the lowest possible cost (Van der Westhuizen, 1997).

- **Exchange rates**

Exchange rates can have a substantial influence on the farmer's export and import transactions. For example, farmers who export their products to the USA can earn a great deal of money if the exchange rate between the dollar and the rand is approximately R7.00 – R8.20 to one dollar. However, if these farmers were to buy inputs from the same country, their gains would be offset by the weak rand in comparison to the US dollar (Buckett, 1988).

The rand's weakness against the dollar is likely to provide the impetus for stronger export growth. It also has the potential to attract investments from abroad. Economic development poses threats as well as opportunities for managers, since the performance of the overall economy influences the demand for their products, the potential for opening new markets, the need to adjust prices, the types of products to be developed, and the need to employ skilled or additional manpower (Republic of South Africa National Treasury, 2001).

2.1.2 Technological environment of the small-scale farmer

The technological environment is a rapidly changing one, with far-reaching effects on organisations and their products. Technological advances can affect materials, components and products, as well as the processes whereby products are made, together with administration and distribution systems, product marketing, and the interface between the organisation and the customer (Brassington & Pettit, 1997).

Technology is in most cases a single factor that is responsible for change and which comes about as a result of research and development. It is the duty of the small-scale farmer to always be aware of the most recent technology being used by competitive farmers (Van der Westhuizen, 1997). Technological renewal also has an influence on other environments, and these in turn affect technology.

The force that will determine the future of agriculture is the ability to implement technology. Certain technological improvements are directly related to agriculture, while others are derived from general technological developments. The former category includes the improved genetic capability of agricultural products through conventional methods as well as through biotechnology, together with more precise nutrition of plants and animals, different methods of cultivation, and improved control of animal and plant diseases, etc. (Fredics, 1998). Some farmers are aware of these technological changes and make adjustments to their farming enterprises accordingly. But where do these developments leave the majority of small-scale farmers?

Technology constrains small-scale farmers in three key areas, namely:

Inappropriateness: Many of the technologies are inappropriate to the resources (land, money, labour availability and skills) of the farmer and also do not fit his operating circumstances.

Inaccessibility: If appropriate technology is available, many of the emerging farmers do not have access to it because service providers see the market as being too small, and/or government systems fail to deliver on time, and/or there is a lack of basic infrastructure to deliver the technology effectively.

Training: Farmers require training in the use of new improved technologies such as production input, farming practices and wise use of credit (Development Bank of Southern Africa, 1995).

The adoption of modern agricultural technology is influenced by the personal attributes of the farmer, by the farming system and environmental factors, by the financial position of the farmer, and by the institutional and infrastructural setup. But if small-scale farmers are to adopt technology and adapt their farming practices, the researchers must develop new technologies that will, at an early stage, provide sufficient economic incentives at low risk, with lower financial, human capital, managerial and labour requirements that will be more attractive to farmers (Chikanda & Kirsten, 1998; Nell, 1998).

2.1.3 Social environment of the small-scale farmer

As from the late 1980s, the social environment has proved to be the most complex one. This can be attributed to a number of factors, including the availability of information that emphasises things like nutritional value, environmentally friendly products and also quality of life. This has led to consumers constantly adjusting their values. The consumers of today expect much, act discriminately, and are constantly searching for new information (Van der Westhuyzen, 1997).

Society is a dynamic and demanding master. Changes in values, coupled with new attitudes toward human resources and the re-evaluation of how management affects human life, are causing farmers to consider social as well as economic goals in their managerial pursuits. The question is: How does a small-scale farmer strike a balance in pursuance of the aforementioned goals?

- **Technological change and social change**

Technological change and social change are interwoven in that we cannot have one without the other. The former appears to induce the latter in two ways: by creating new opportunities for human beings, and by generating new problems for them. While on the one hand technology strengthens the economy, on the other the same technology tends to bring about dislocations of business and people, leading to job losses (Starling, 1996).

As a result of technology, in the past many people left the rural areas, which were traditionally regarded as farming strongholds, and sought employment in the mines and industries. Education also plays a pivotal role in the socio-economic environment, as it influences most of the decisions people make. To most people, education is the guiding force giving direction in life. In fact, the direction a society takes is dependent in great measure on the educational opportunities afforded its people. People's beliefs, fears and prejudices are determined largely by the tendencies and predispositions acquired through learning. Another contributing factor is the low potential profit derived from farming. The implication of this is that the succession of workers, as well as farmers themselves, can no longer be taken for granted, as the younger, more skilled and mobile generations are increasingly turning to other career opportunities (Terry & Franklin, 1982; D'Haese & Mdula, 1998; Fenwick & Lyne, 1999).

On the other hand, people are becoming more and more health conscious and environmentally friendly. This is reflected in the demand for organically produced products as opposed to those produced using chemicals, as well as campaign groups such as environmentalists who advocate the use of environmentally friendly inputs in cultivation, etc.

2.1.4 Natural management environment of the small-scale farmer

The natural environment is sometimes referred to as the physical environment (Du Plessis, 1993; Van der Westhuizen, 1997). It entails the availability, conservation, improvement and exploitation of the limited natural resources. It can be seen as the environment from which the farmers acquire limited resources such as raw materials, energy and food. As with other external environmental factors, the farmer has no control over this environment and as such it can pose both threats and opportunities, which could take the following forms:

- The climate of the region, i.e. temperature, rainfall, daylight hours, frost-free days, etc., has far-reaching effects in that it dictates the type of livestock and crops to farm with (Buckett, 1988).

- A shortage of the basic means of production influences the supply of goods and contributes largely to major price increases and a resultant high rate of inflation (Du Plessis, 1993). The negative results of waste, pollution and even noise pollution must be guarded against (Du Plessis, 1993).

It is the responsibility of the farmer to limit pollution to the environment, to adhere to the recommended carrying capacity of his veld, and to control alien plants, as these actions could save him a great deal of trouble in terms of government agencies such as the Resource Conservation Directorate and environmental conservation groups such as Greenpeace.

Within this (natural) environment the supply of the basic means of production to small-scale farmers is fraught with problems, which could impact negatively on the farmers, since the availability of resources determines to a great extent the level of output achieved by these farmers.

2.1.5 Politico-legal management environment of the small-scale farmer

This environment is fraught with variables that are difficult to predict and control. They are largely determined by the government of the day. It is the small-scale farmer's responsibility to become conversant with the point of view of the government of the day. Some of the aspects with which the farmer should be familiar are:

The Marketing Act

The Trade Practices Act / Trade Policy

Labour Legislation (Du Plessis, 1993; Van der Merwe & Otto, 1997).

The Labour Relations Act governs the legal relationship between a farmer and his workers. In the past, farmers were not closely involved with the unions, but the situation has changed in recent times. Workers now have the right to belong to a union, the right to fair labour practices, and the right to embark on legal strike action (Steenkamp, 1999).

In some way or another, the farmer is influenced by the ever-changing politics in this country. The South African government is set on applying the equality of rights and on imposing a free market economy as a result. Private ownership and the freedom of choice of profession are encouraged. The government of the day can influence and change the market of the farmer. It is therefore the duty of the farmer to understand and adhere to the above-mentioned laws (Van der Westhuyzen, 1997).

The South African government has been moving away from direct involvement in the marketing of agricultural products through the deregulation of marketing in terms of the Marketing Act, and is allowing market forces to have a more determining influence. This implies the liberalisation of price controls in large parts of the farming sector, which again complicates the situation even further (Meyer, Fènyes & Louw, 1998). This has been done without assessing the small-scale farmer's sensitivity to the influence of government policy and the implementation of certain legislative measures.

The political environment, like any other external environmental factor, is characterised by opportunities as well as threats with which a farmer should become familiar and to which he should adapt his strategies accordingly. This is evident in the White Paper on Agriculture (1995) in which the government aims at achieving "a highly efficient and economically viable market–directed farming sector, characterised by a wide range of farm sizes, which will be regarded as the economic and social pivot of rural South Africa and which will (positively) influence the rest of the economy and society".

Among the goals to be pursued in order to achieve the above are:

- A new order of economically viable, market-directed commercial farmers, with the family farm as the basis, and
- Financial systems that focus on the resource-poor and beginner farmers and which enable them to purchase land and agricultural inputs (Fènyes & Meyer, 1998).

It is a fact that access to resource markets, including land, input and finances, and commodity and support services, is a major empowering mechanism for small-scale farmer development. Seemingly there is no tangible plan on the part of the government as to how it will achieve its aim as stated in the above-mentioned White Paper. Measures are required to release constraints and provide information on market opportunities, and also to create niche markets for the provision of a whole range of products. It is imperative that policymakers conduct an analysis to establish whether deregulation or regulation is necessary to allow for full exploitation of possible niches by the small-scale farmer (Kirsten & Van Zyl, 1998).

2.1.6 International management environment of the small-scale farmer

The international environment can be defined as, “firstly, the influence of actions by foreign governments and individuals on farmers in South Africa, and, secondly, the foreign policy of the South African government, and, thirdly, occurrences in foreign countries (e.g. droughts) which have a direct bearing on the farmer who exports his products” (Van der Westhuizen, 1997).

Since every country has its own unique environmental factors, with its technology, culture, laws, politics, markets and competitiveness being different from those of other countries, it is therefore prudent that whoever intends to export should be fully informed regarding international marketing conditions, rates of exchange, levies and subsidies applicable in the countries concerned (Giles & Stansfield, 1980; Van der Westhuizen, 1997).

Developments in other countries, for instance an increase in the price of crude oil instituted by the Organization of Petroleum Exporting Countries (OPEC), have a tremendous influence on local farmers and even on the country as a whole. This prompts the farmers to increase their product prices as a consequence of the increase in the prices of production inputs such as diesel fuel, etc.

There is an international trend towards liberalising trade and reducing restrictions on the movement of goods and services. The World Trade Organisation (WTO) is working towards this goal. This organisation manages multilateral trade agreements, and the functioning of this organisation has the following implications for small-scale farmers in particular: they will increasingly have to compete with foreign producers, and domestic prices will increasingly be derived from international prices. For most commodities, the domestic price will be very close to the landed price of the imported product (import parity) or the amount realised by an export product (export parity) (Standard Bank SA, 1999).

South Africa has a vision of free trade with her Southern African Development Community neighbours. This vision will bring with it opportunities for our neighbours to the north and greater competition in the agricultural marketplace in South Africa. It can be expected that comparative advantages will result in some shifts in production and trade in the region (Swart, 1996).

The Free Trade Agreement (FTA) with the European Union (EU) has the following effects on the South African agricultural sector, in particular the small-scale farmer:

Increased competition on the local market by EU products entering the market on a duty-free basis, and improved access to the EU market for South African exports. Of particular concern is the effect of EU export products, which enter the South African market with an export subsidy, since such subsidies have an impact on South African prices (Gay & Niewoudt, 1999). The main disadvantage for most small-scale farmers is that they are not yet in a position to produce quality produce that can compete with EU products, let alone handle price competition even from local commercial farmers.

It is evident from the above-mentioned trends that quality or uniqueness is becoming more and more important in the global village. On the other hand, consumers are also many and varied. This has an advantage in that some will demand low-priced products, while others will pay a premium for quality and uniqueness (Cronje, Jooste, Dannhauser & Coetzee, 1999). Presently, the small-scale farmer does not appear to be up to the challenge of competing in such an environment.

The above-mentioned factors indicate that the small-scale farmer can do nothing to affect or influence these macro-economic variables that affect him. He can, however, implement different strategies at farm level to address the challenges imposed by the marketing environment to achieve objectives like survival, growth and profitability. Unless a farmer is efficient at farm level the external management environment variables, particularly the deregulated market, will certainly drain and replace him (Van der Westhuyzen, 1997; Bauer, 1999).

2.2 INTERNAL MANAGEMENT ENVIRONMENT OF THE SMALL-SCALE FARMER

The discussion here focuses on the formulation of objectives, managerial requirements and education, incentives for motivation, personnel management and marketing by the small-scale farmer. The management processes of the farmer, which include planning, implementation and control, are looked at in terms of how small-scale farmers apply them in the above-mentioned areas.

2.2.1 Formulation of farming objectives

The first task of a farmer during planning is to identify and set objectives. Objectives form an integral part of the planning task. Objectives give direction to a farm business, and if they are to achieve the desired results they must be clear and simple. Objectives should be realistic and valid for the short, medium and long term. To be achievable they should be quantifiable and specific to allow observation and monitoring (Terry & Franklin, 1982; Buckett, 1988; Standard Bank SA, 1999).

Every farmer formulates his objectives to suit his specific requirements and circumstances. Every managerial objective is subject to interpretation. The exact meaning will depend on the manager's/farmer's personal value systems. The importance an individual attaches to one objective or goal compared to another depends on that person's current financial situation and future financial needs, as well as his/her set of values (Terry & Franklin, 1982; Boehlje & Eidman, 1984; Standard Bank SA, 1999).

2.2.2 Managerial requirements and education

Management involves the making of decisions on what to produce, how much to produce, and the inputs to be used in production. It also involves decisions on when and where to produce, what to do with the products emanating from the resources, and the use of capital, labour, and land resources.

The above-mentioned factors require knowledge concerning existing and prospective technology and also existing and prospective markets for products and resources. They require knowledge of the physical, social, political and technological environments, as well as the ability to adjust to changes in these environments. Although some of these factors may not necessarily depend on a farmer's ability to read and write, the ability to follow even simple instructions in the use of modern technology (simple machines), fertiliser, pesticides, etc. depends on the farmer being literate. In the same way, the ability to read and write enables the farmer to do simple calculations concerning revenue and costs, and to avoid being cheated (Chikanda & Kirsten, 1998).

The most important skills required by the small-scale farmer include the following:

- **Technical skills:** This refers to the ability to use specialised equipment, procedures and techniques. The farmer should possess various technical skills so to be able to be on top of things or supervise every task that is performed on the farm. He should also be able to use every machine and implement to which he has access (Van Niekerk, 1987).

- **Communication and negotiating skills:** The new labour law gives employees a host of rights, including the right to strike. The complex trade environment requires farm managers to possess negotiating skills since they will at some stage have to negotiate with unions and also be involved in contractual arrangements with input suppliers, banks, product processors, etc. It also requires managers to possess an ability to provide information verbally or in written form to others in the organisation for the purpose of achieving the desired results. These skills are important at all levels of management (Van Niekerk, 1987; Bauer, 1999).
- **Human skills:** This refers to the ability to work with, understand and motivate other people, as individuals or groups. This requires the hiring, training and retention of a highly skilled labour force. This is extremely critical, since agriculture is competing with other industries in terms of salaries, working conditions, health and safety regulations, etc. (Van Niekerk, 1987; Bauer, 1999).
- **Analytical, economic and investment skills:** This refers to the ability to apply logical and scientific approaches or techniques to the analysis of problems and the identification of business opportunities. These skills are most important at the top management level. Opportunities and threats present themselves during periods of change. A farmer therefore has to possess both vision and enthusiasm, since these are important attributes in business development and sound economic and investment analysis and are requirements for sound business decisions. The farmer should evaluate his enterprise continuously and set up alternative scenarios by means of which he can test the viability of his farming enterprise. If he does not possess the necessary skills, he should enlist the assistance of persons who offer such a service on a professional level (Van Niekerk, 1987; Van Reenen & Marais, 1992; Bauer, 1999).
- **Conceptual skills:** This refers to the ability to “see the big picture”, in other words, to have a clear vision of where an organisation is headed so to be able to optimally co-ordinate and integrate the activities and interests of the organisation. This includes the ability to not only visualise the organisation as a whole, but also to understand how the different components interrelate and how the whole organisation will be affected should any one component change (Van Niekerk, 1987).

In this ever-changing management environment, the small-scale farmer will in future require the following skills to be able to farm efficiently in a sustainable and profiTable manner:

- **Agricultural technology management skills:** Technology has the potential to considerably expand primary agricultural industry. Farmers will have to learn how to use and manage technology in order to increase their production and process their produce effectively.
- **Environmental management skills:** Primary agricultural producers will be required to think strategically about environmental issues, especially with respect to the use of chemical fertilisers and pesticides and certain cultivation practices. Governments as well as non-governmental organisations worldwide are putting pressure on businesses to care for the environment.
- **Food management skills:** Consumer concern about food quality and safety issues, whether real or perceived, is gaining momentum and is not likely to diminish as we move forward into the twenty-first century. Farmers are required to think strategically about food safety matters (Heney, 1999).

Since it is a known fact that most small-scale farmers do not posses the above-mentioned skills, they are therefore left with the option of employing people who have such skills, either on a contract or a full-time basis. But the question is: How many farmers can afford to take this route?

2.2.3 Incentives for motivation

In most human endeavours incentives serve as a motivation for one to continue doing what one is doing or to pursue what one wants to achieve. Incentive is the reason for either farming or aspiring to farm. It is directly linked to the achievement of objective(s). The farmer has to have an objective(s) or goal(s) to strive towards, and, upon achieving such objective(s) or goal(s), he must be motivated or encouraged to continue to set more goals.

The first step for a farmer is to determine the mission or main objective of the business, which serves as the basis for strategic and long-term objectives. The various long-term, medium-term and short-term objectives should be combined in a synergistic manner to achieve the basic or main farm or enterprise objective. The mission will take into account

factors such as the reason for farming, market availability, social responsibilities, and future of the business (Van Niekerk, 1987; Standard Bank SA, 1999).

The farmer's goals or objectives can vary based on a number of factors such as the person's current financial situation, the current and future financial needs biography, management skills, etc. The following are examples of the objectives the farmer might pursue: to maximise profit or return; to increase net worth; to reduce borrowing needs; to increase leisure time; to provide community service, etc. Analysing the objectives gives one a good indication of incentives and motivation, which may be evaluated in terms of their quantifiability, time constraints and attainability, as well as the degree of conflict that can occur amongst them. Objectives may be drawn up formally (in writing) or informally, and are also influenced by the external management environment (Boehlje & Eidman, 1984; Van der Westhuizen, 1997).

A farmer ought to have well-defined objectives that enable him to carry out his management task more purposefully to achieve the goals that have been set. Such objectives should be arranged in order of priority and be checked daily, and the farmer should make a note of which objectives have been achieved. This will enable him to evaluate the successes and failures at the end of the set period (Van Reenen & Marais, 1992).

- **Capital**

Farming usually requires a huge outlay of capital, especially during the establishment of an enterprise. The exact amount of capital required depends primarily on the type of enterprise envisaged. For the most part, capital for new farm investments and growth comes from two basic sources, namely equity capital and borrowed funds. Other sources include, *inter alia*, savings, gifts and inheritances, outside equity capital, leasing, contract production, and vertical integration (Harsh, Connor & Schwab, 1981; Boehlje & Eidman, 1984).

Capital resources are defined as abstract capital (money used to operate the business) and physical business (e.g. investment in livestock, buildings, animal housing, implements, vehicles, machinery and equipment). The main criterion according to which the allocation of capital should be evaluated in the case of abstract capital is the return on each R1 that is spent. The criteria for the procurement of external funds (external

capital) have changed over the course of time, and financial institutions have developed other guidelines according to the individual farmer's creditworthiness. Since capital is one of the scarcest commodities and a key factor for either the success or failure of any enterprise, it is therefore of utmost importance that a cash-flow budget be developed before capital is employed (Du Plessis, 1993; Van der Westhuizen, 1997).

Given the history of this country (South Africa) the majority of small-scale farmers do not have the huge capital outlay required to start a farming business. The Land Bank offers a wide range of financial packages for farming purposes, with small-scale farmers being offered a package known as the Bronze Range, which carries a higher-risk fund levy. This range allows the bank to lend funds to new entrants to the formal market who have no track record. The product range covers long-, medium- and short-term needs. The bank also claims to offer two additional products specifically to meet the needs of the rural poor, namely the "Step Up" and the "Agri Save" schemes. The extent to which such packages meet the financial needs of the farmers is, however, not clear (Dolny, 1998).

- **Land**

Land as a resource is made up of the land and the water available for irrigation and/or for drinking water for livestock. The quality of land is reflected in, amongst other things, the texture of the soil, the depth of the topsoil, drainage, the permeability of the subsoil, the pH, the water retention capacity, and the natural fertility of the soil. Previous cultivation practices, historical crop yields, weed control problems and soil erosion influence the quality of the land resource (Van der Westhuizen, 1997).

Access to land and production rights remains a major constraint for the extension of farming to small-scale farmers, especially in the former homeland areas. Land purchase by small-scale farmers is currently possible, but is limited to the economic and political elite, excluding those with limited capital and no political connections. For some with limited options, one way to acquire land is through the land reform programme whereby prospective farmers are settled on a piece of land with a grant (initially R15 000, which has now been increased to R25 000 per person) (Van Rooyen & Van Zyl, 1998).

However, for land reform programmes to be successful, they must be supported by a range of services, including access to land and property markets. Land valuation, farm planning, training and extension, credit, and financial and legal support should augment

such services. In addition, infrastructure such as roads, electricity, water systems, etc. will be required for productive farming. Since such farmers might not be able to afford the above services and/or be able to compete directly in the marketplace, the infrastructure costs could at least be partly incorporated into the eventual price of land, water fees, etc. Innovative alternatives to provide small-scale farmers with access to land and farm assets should be promoted, as should joint ventures and partnerships between existing commercial farmers and new entrants, which should include leasing – for example cash lease, crop cash lease, or livestock share lease (Boehlje & Eidman, 1984; Van Rooyen & Van Zyl, 1998).

2.2.4 Personnel management

Personnel management is "the planning, organizing, directing and controlling of the procurement, development, compensation, integration, maintenance and separation of human resources to the end that individual, organizational and societal objectives are accomplished" (Flippo, 1984). This definition can be divided into two areas, namely management functions and operative functions. Management functions are planning, organising, directing and controlling, while operative functions are procurement, development, compensation, integration, maintenance and separation.

Planning in the context of personnel management refers to the advance formulation of a personnel programme that will contribute to the goals established for the enterprise. Labour is one of the production factors in farming which, like other factors, calls for proper management. The purpose of managing human resources is the efficient use of manpower and therefore greater labour productivity. Increased labour productivity, in turn, leads to greater farm profitability and offers the farmer and his employees more free time (Van Reenen, Marais & Nel, 1995).

Many changes have taken place recently in the area of personnel management, which has a direct bearing on the farmer's management practices. These changes cannot be taken for granted since they have legal implications. This implies, therefore, that the farmer has to acquaint himself with the developments in this regard (personnel management) and comply with the directives given, since failure to do so, whether due to ignorance or lack of capacity, could lead to prosecution.

- **Procurement (recruitment, selection, placement and induction)**

When planning labour, it is necessary to consider the number of staff members required, the skills that will be necessary, the availability of workers, the degree of authority and responsibility that will be given to each person, as well as the wages and conditions that will be provided (Buckett, 1988).

The two most important factors that should be taken into account are availability and flexibility. The time when labour is available could be more important than the number of labourers available. The daily working hours, as well as the number of working days per week, should be considered. If a farmer somehow finds it difficult or rather impractical to adhere to the labour law he can, if possible, utilise family labour, since this differs markedly when it comes to labour laws. Hired or family labour could entail varying attitudes and responsibilities, which in turn could influence flexibility and availability (Van der Westhuizen, 1997).

Since potential profits are low on small farms, more skilled and mobile members of households have a competitive advantage in off-farm employment, as they are leaving a vacuum behind. This creates a vicious cycle, since the vast majority of migrant workers are young and relatively well educated, and this loss of quality of labour has adverse implications for small-scale farms (Fenwick & Lyne, 1999).
On the other hand, however, the high level of unemployment, while having so many undesirable economic and social consequences, places farmers in a position where they have an oversupply of unskilled and semiskilled labour. This puts small-scale farmers in a favourable competitive position regarding production that requires unskilled labour (Groenewald, 1996).

- **Labour relations**

The Labour Relations Act governs the relationship between a farmer and his employees. Both the farmer (employer) and the employee are subject to the Basic Conditions of Employment Act of 1997. The Act includes the following areas with which an employer must be familiar: service contracts, working hours, wages, compensation, leave, termination of employment, etc. (National Department of Labour, 1998; Steenkamp, 1999).

- **Labour productivity**

Unskilled labour and lack of farming know-how on the part of the small-scale farmer result in low farm productivity. According to Masiteng and Van der Westhuizen (2001) this is compounded by lack of infrastructure. Skilled labourers, if available, demand higher wages than what the farmer can afford. Again, farmers in most instances cannot afford the wages of sufficient numbers of unskilled labourers to work the land properly (D'Haese & Mdula, 1998).

2.3 MARKETING ENVIRONMENT OF THE SMALL-SCALE FARMER

2.3.1 Introduction

Marketing is "the performance of all business activities involved in the flow of food products and services from the point of initial agricultural production until they are in the hands of consumers" (Kohls & Uhl, 1998). Marketing can also be defined on the basis of the activities involved in marketing, such as "to establish, maintain and enhance long-term consumer relationship at a profit, so that the objectives of the parties involved are met. This is done by mutual exchange and fulfilment of promises" (Brassington & Pettit, 1997).

From the two definitions above it is thus clear that marketing is comprehensive and requires a farmer to analyse his market in terms of demand for his products and market share and then to plan, implement and control his activities in an attempt to achieve set objectives. Of utmost importance in marketing in relation to small-scale farmers is access to resource markets, including land, inputs and finances, as well as commodity and support services. Of equal importance is the availability of information on market opportunities.

Since marketing is a vital link between the production function of the business and the ultimate consumer of the product, the objective of the marketing function of a business should be to satisfy customers by providing them with products that meet their needs. All the farmer's activities should be in pursuance of this objective (Doyer, 1999).

Marketing plays a crucial role in any enterprise and therefore requires a systematic approach, i.e. marketing strategy. A proper marketing strategy has to follow seven distinct steps, namely:

- Analyse the customer
- Analyse the market
- Review the competitive situation
- Review the distribution channels
- Develop a marketing mix
- Consider economics
- Revise and adapt the plan (Doyer, 1999).

It is evident that small-scale farmers at all times need to make quick but informed decisions. For this reason these farmers require more than information on just prices and quality. Marketing information is as important to them as it is to large-scale farmers since it facilitates the smooth and efficient operation of the marketing system. The relatively isolated situation of small-scale farmers makes them reliant on extension officers for advice on marketing channels and changes in the marketing structures. It is thus imperative that extension officers are in a position to provide this advice, as well as advice on sources of credit and other aspects of marketing improvement (Fraser, 1994).

The information system that is already in place for advising small-scale farmers (extension officers or development advisors) should not only give information to these farmers, but should also receive information from them, i.e. bidirectional information. The same system needs to be developed and matured to receive feedback. Any development programme aimed at small-scale farmers must pay attention to their concerns in order to be able to assist them accordingly (Mdaka & Heinhson, 1996). At the same time there should be a similar type of relationship between the farmer and the consumers. The farmer must solicit information from the consumers of his products in terms of their needs, product specifications, etc.

For the farmer to be able to market successfully he has to create a marketing mix, which is a blend of pricing, promotion, product offerings and a distribution system designed to reach a specific group of consumers (McDaniel & Darden, 1987).

2.3.2 Marketing problems in relation to the marketing mix of the small-scale farmer

- **Product**

Every customer requires specific or unique characteristics of a product to satisfy his specific needs. These characteristics, such as a form (fresh, frozen, whole, pieces, etc.), styling (packaging), reliability (quality and quantity), size, service (timeliness, reliability of delivery and friendliness) and brand naming, should be such that they meet the needs of the target market (Doyer, 1999). The farmer should constantly seek feedback on the above-mentioned factors from his consumers so that he knows exactly what his customers require.

The quality requirements of the market make it more difficult for small-scale farmers, since these farmers do not have cold-storage and other facilities. The farmers argue that national markets are characterised by fluctuating prices and high grading requirements – aspects with which they are not conversant. Failure to meet those grading requirements, together with inadequate financial support and restrictive opportunities to compete in agricultural markets, results in their crops fetching poor prices, which in certain cases do not cover their direct costs. The small-scale farmer therefore believes that selling his crops on the field has certain advantages over selling them through national markets (Mdaka & Heinhson, 1996; Chikanda & Kirsten, 1998).

- **Place**

Farmers should choose an appropriate distribution channel to reach the targeted market in the most efficient way. The distribution channel chosen should match the characteristics of the farmer's business and the consumer in terms of cost and characteristics (Doyer, 1999). For example, the farmer should decide whether to sell to hawkers, supermarkets, fresh-produce markets, etc.

In this chain (marketing), transport infrastructure plays a crucial role. Chikanda and Kirsten (1998) have established that the use of fertiliser, seed, chemicals, feeds and veterinary medicines declines with an increase in the distance to input markets, but increases with an increase in the number of suppliers. These authors point out an implication that arises as a result of a lack of transport infrastructure coupled with long

distances to markets, namely high transaction costs due to increases in distance to the markets and high transaction costs due to difficult and slower relocation of the inputs. This leads to the severe undermining of the accessibility to and use of agricultural inputs and services by small-scale farmers, which also results in poor or low-quality produce.

Lack of transport also causes small-scale farmers to lose their market share to large-scale or commercial farmers. It is difficult to co-ordinate transport to market the produce of small-scale farmers, as they do not necessarily have similar crops, and collection points tend to be far away. The problem is exacerbated by the fact that each farmer has small quantities to market. This increases the cost of transport, often putting it beyond the reach of the small-scale farmer (Mdaka & Heinhson, 1996).

- **Price**

When pricing their produce, farmers have to consider the factors mentioned below, as they have a tremendous impact on sales:

- Quality
- Competitors
- Ability to pay
- Price elasticity

Also to be considered are the price actions of complementary, supplementary and competitive products. Price is also influenced to a larger extent by distance to the market, as transport costs then come into play (Fraser, 1994; Doyer, 1999).

Due to a lack of information and co-ordination, small-scale farmers are mainly price takers. This is due to a number of factors, i.e. most such farmers farm in the rural areas far from established markets, and lack transport, and as a result they are bound to sell to whoever can offer them any price. Due to theft, some crop farmers are forced to sell their produce before the crops are fully matured and as such cannot command a good price (D'Haese & Mdula, 1998).

As a result of the above-mentioned factors, small-scale farmers resort to the informal market where there is little regard for price structures. The farmers have over the years established a fixed price structure, which ties in with the needs of the hawkers, and as a

result hawkers find themselves selling the same things at the same place at the same time, which kills the competitive spirit (Mdaka & Heinhson, 1996).

- **Promotion**

It was mentioned earlier that culture has an impact on the practices of small-scale farmers; thus the spirit of companionship, which is induced by culture, influences promotion. When promoting goods to hawkers, sellers do not want to be seen doing so to the disadvantage of others. The level of literacy also plays a central role in promotion. Due to the low literacy level among communities in South Africa, exposed products normally sell better than concealed or covered ones. In terms of hygiene, this is not a desirable practice, but it is nevertheless one that seems to work for them. Thus small-scale farmers prefer to promote their goods in this way rather than in the way prescribed by national markets (Mdaka & Heinhson, 1996).

Small-scale farmers cannot afford expensive promotional campaigns such as advertising on television and radio and in newspapers; instead personal selling could be more appropriate for them. With personal selling they make direct contact with the buyers and are able to adapt the promotional message to the specific needs of the customers. Some of the methods that could be used by farmers are sales promotion and direct selling. With sales promotion discounts, samples, coupons and demonstrations are used with the aim of motivating customers to buy. During direct selling customers are approached directly with a specifically tailored sales message (Buckett, 1988; Doyer, 1999).

There is a certain belief or tendency among some small-scale farmers that they have a guaranteed market, so they do not bother to promote their goods. This is evident in their typical behaviour of spending most of their time in their fields. This confirms that small-scale farmers have a greater psychological identity and regard themselves as being part of the market, feeling that the market should come to them (Mdaka & Heinhson, 1996).

- **Input availability and institutional setup**

Small-scale farmers are mostly in the dark about the range of inputs and services available from various input suppliers in the country. There is a lack of institutional support for small-scale farmers, which is due to several factors, either founded or unfounded. These include, amongst others, lack of financial support at farm level for the

education of small-scale farmers, which is caused by an outright misconception regarding the role of human development in agriculture (Chikanda & Kirsten, 1998). According to the source cited above, small-scale farmers are victims of colonial history, because they are always asked to participate in agriculture after land rights and access to financial, research and extension service institutions, etc. have been set up or appropriated to large-scale white farmers. As such small-scale farmers face institutional uncertainty due to colonial legislation that did not contemplate or envisage small-scale farmers as being meaningful participants in agriculture. This situation creates an environment that discourages willing and potential small-scale farmers from investing in or adopting new and more productive practices due to an absence of secure expectations of possible gains.

As a result, small-scale farmers narrow their input use and investment options towards production activities that minimise the cost of failure rather than exploit available opportunities. The above-mentioned factors further compel small-scale farmers to use informal markets, the role of which has been underestimated or overlooked.

Therefore, there is a need to articulate the demands of the people in the informal market if the potential of this market is to be exploited.

Informal marketing has the following advantages:

- It ensures food security in the townships;
- It absorbs labour in today's climate of high unemployment;
- It has more legitimacy in areas where socio-political forces are quick to destroy businesses that are interpreted as exploitative and unwanted.
- It is a consumer-oriented form of trade and is thus demand driven;
- It promotes the economy as well as monetary flow within the townships; and
- It is a valuable source of income for many township dwellers (Mavhandu, Van Rooyen & Van Schalkwyk, 1998).

The demand, particularly of the poor, is inadequately understood and improperly linked to supply in development work. Because the poor have little purchasing power, they are peripheral to the structural market economy with which so much development thinking and activity is concerned. The demand of poor people for goods and services is tightly interwoven with non-organisational institutions. In most cases economists link the demand of goods to the disposable income of individuals. This alone cannot be used to

demonstrate demand. According to Mustapha (2000) the proper understanding of the demands of the poor requires sound assessment of institutional forces lying outside the formal marketplace. Effective demand is an extremely powerful source of information, incentive and co-ordination. The ability of the poor to exercise it generally needs to be strengthened, and policies that might limit its effect should be approached with extreme caution.

D'Haese and Mdula (1998) state that for the farmer to be successful in both the domestic and the export market, his produce should have the right taste, shape, colour and size. To be able to compete successfully in these markets a number of aspects need to be attended to, such as quality control on the farm, and optimal storage and packaging.

These aspects require substantial on-farm investment, which is beyond the means of these farmers due to their low income and limited access to credit. In addition, the absence of roads coupled with poor transport facilities increases transport costs for these farmers.

It is a known fact that most small-scale farmers are culturally oriented people. Their marketing activities should therefore be viewed against the background of the academic programmes related to marketing being geared towards "Western" marketing per se. Again, those in authority, i.e. government, development agents, corporations, non-government organisations and community-based organisations, seem to be either ignorant or unwilling to appreciate the impact black culture has on small-scale farmers (Mdaka & Heinhson, 1996). It is thus clear that this is a neglected market niche. If problems faced by the small-scale farmer, such as recognition of the advantages of cultivating traditional crops, are not addressed, difficulties will continue to plague the marketing of small-scale farmers' produce.

- **Marketing risks / uncertainties**

As in any enterprise, risk is and remains an ineviTable part of farming – even small-scale farming. Risk is a situation where the outcome is not known but the probability of an alternative outcome is known. "It is uncertainty that 'matters' and may involve the probability of losing money, possible harm to human health, repercussions that affect resources, and other types of events that can affect a person's welfare" (Geyser, 1999). It is not possible to eliminate risk completely, but it can be reduced or shifted to a third

party. A farmer has to put some mechanisms in place to reduce the impact of risk so that when disaster strikes he does not suffer immensely.

There are various types or sources of risk or uncertainty in marketing. These include, amongst others, market risks, yield, price and personal and financial risk. Yield risk occurs because agriculture is affected by many uncontrollable events related to weather, including excessive rainfall, extreme temperatures, hail, insect plaques and diseases. These factors can pose a serious threat if a pre-harvest marketing strategy is employed.

Some of the risks and uncertainties arise as a result of changes in international trade agreements aimed at lowering tariffs, as well as national agricultural policy and policy programmes that drastically change the marketing environment in South Africa. These include changes in the interest rate policy, monetary and fiscal measures, and the introduction of free trade agreements with the Southern African Development Community (SADC) and the European Union (EU). The interpretation of these agreements and policies often breeds greater uncertainty (Standard Bank SA, 1999; Geyser, 1999).

- **Strategies to counteract marketing risk / uncertainty**

Small-scale farmers use various strategies to counteract risk, including:

"Stokvel": Since some small-scale farmers have limited access to appropriate deposit facilities they use informal savings instruments such as cash holdings, in-kind savings (animals, grain, raw materials, etc.), rotating savings credit (ROSCAS), and other forms of financial and non-financial savings and loan associations.

Sale of assets: Assets such as marketable livestock and grain are sold so as to earn some income. This improves the liquidity of the farm business and also ensures that the farm is able to meet its short-term liabilities, while at the same time allowing the farmer to continue with his farming activities.

Diversification: Most small-scale farmers use a diversified approach to sources of income. They rely on a variety of sources of income, with agriculture being but one of them. This involves business activities such as taxis, shops or spaza shops, welding, bricklaying, etc. (Standard Bank SA, 1999; Maphalla & Salman, 2002).

2.4 PRODUCTION OF THE SMALL-SCALE FARMER

2.4.1 Farm size of the small-scale farmer

Small-scale farmers are not a homogeneous group in many respects. And if land was the only issue to be considered when defining them, some would not qualify as small-scale farmers at all. The average farm size owned / farmed by small-scale farmers varies considerably from less than a hectare to approximately 500 hectares or more (Mukhala & Groenewald, 1998; Nell, Viljoen & Lyne, 1999).

2.4.2 Machinery and equipment of the small-scale farmer

Most small-scale farmers own neither machinery nor equipment. Any machinery or equipment owned by such farmers is usually in poor condition. In some cases, animal-drawn planters have been converted for use with tractors. Often the area cultivated is too small to justify an investment in a conventional planter. Since the machinery and implements are in poor condition they are obviously not reliable during peak periods, which results in low productivity of land and livestock with the resultant negative effect on liquidity and financial success (Mukhala & Groenewald, 1998; Nell *et al.*, 1999).

2.4.3 Crop production of the small-scale farmer

- **Soil preparation**

It is a well-known fact that most small-scale farmers, like other farmers, rely on tractors for ploughing and planting; however, a few still use animal traction. In general all farmers prepare their fields before planting, despite the many hardships they face on every front.

- **Weeding and fertilising**

With regard to weeding, the farmers rely on casual workers who demand immediate payment, which adds to the cash-flow constraints experienced by these farmers. On the other hand, for those households that use family labour for weeding, the retention monies are usually small but welcome. Weeds are mainly controlled by means of hoeing.

In some areas land is allowed to lie fallow in order to improve fertility. In many instances little or no fertiliser is applied except in the form of kraal manure (Walker, 1999).

There are numerous reasons why individual farmers do not purchase and/or apply sufficient fertiliser, including cash-flow problems, transport difficulties and labour constraints in the context of household economy.

Small-scale farmers also require more cash to pay new prices for inputs, which relates to competitive position and comparative advantage. Inevitably this implies that the viability based on established crops has to be reviewed, which means a much more active search for opportunities for crop and activity diversification (Howe, 2000).

- **Plant protection**

Plots of varying sizes, together with a great diversity of crops, characterise small-scale farming. This has important implications in terms of crop protection. The great diversity of crops grown affords some protection, as pests are seldom able to build up to destructive proportions on the few isolated plants of each species. Also, the closed canopy consisting of some trees left standing and tall crop species reduces the severity of pests and weeds. Small-scale farmers also practise burning, rotation and intercropping, which help reduce losses to pests and weeds (Rowland, 1993).

When these farmers start to produce more for the market, they start changing their cropping system: crop diversity decreases where sole/mono-cropping is adopted and high-yielding varieties with low pest resistance are grown. However, as they adopt the latter the former disappears. The main disadvantage of the latter is that it increases the farmer's reliance on pesticides as the traditional methods of pest control disappear (Rowland, 1993).

Since we are living in an era where real costs are levied for work and services, so production and institutions have to respond to the imperative of cost coverage. If resources are to be used well they must reflect underlying economic advantages. The critical question is: In which production and market niche do small-scale farmers have the strongest assets and how can that particular comparative advantage be strengthened (Howe, 2000)?

2.4.4 Livestock production of the small-scale farmer

- **Breeding**

In livestock farming it is imperative for a farmer to know the normal lifecycle of the type(s) of animals with which he farms. This will go a long way in terms of helping him to know when these animals need to be mated, as well as when they have to be culled.
In the case of both large and small stock, if a farmer fails to detect when an animal is on heat (oestrus) the financial implications could be far reaching (Steenkamp, 1999). Equally important is the reproduction rate in the livestock herd since it has important implications for liquidity. The determinant of the reproductive rate is the female-to-male ratio. Results of empirical research by Nell (1998) show that some small-scale cattle farmers maintain a female-to-male ratio of 80:1, compared to the norm of approximately 25:1. Weaning rates vary widely (8-100 percent for cattle and 19-115 percent for sheep) (Nell *et al.*, 1999).

- **Selection**

Selection should commence during the first lactation. An animal that proves itself in terms of genotype and phenotype should remain in the herd. Should a farmer find it necessary to purchase an animal, he should keep the following factors in mind:
Economic viability: This relates to the selection of a breed that will produce a quality and quantity product with the lowest possible cost.
Adaptability: The breed chosen should be suited to climatic conditions in the farmer's area. A farmer could start by looking around to see whether such a breed is available in his area.
Purpose and feeding system: The purpose for which the animal is to be used is of paramount importance, as is the feeding system envisaged, for example in the case of a dairy enterprise, Jerseys are better grazers than Holstein Frieslands and are, therefore, better suited for extensive dairying practices (Steenkamp, 1999).

- **Nutrition**

It is a known fact that using the best sires when breeding animals is of utmost importance and pays the maximum dividends. But equally important is the role played by nutrition. Martin (1998) states that good nutrition is essential if a cow is to reach her full

potential. Nutritional imbalances, deficiencies, or erratic management of feeding programmes, particularly amongst dairy cows, creates numerous health problems generally known as metabolic diseases.

According to Krause as quoted by Masiteng (2000) small-scale farmers practise extensive farming. The large amounts of daily animal feed and nutrients required to produce milk in a dairy cow are obtained from the natural pastures. However, production from grass is not simple since it involves decisions on grassland and veld-burning management.

- **Animal health**

According to Maree and Casey (1993) there is a relationship between the general level of productivity in cattle on the one hand and ill health and mortality from infectious diseases on the other. Masiteng (2000) concurs when he states that healthy cattle are productive and that the farmer has a duty to ensure that his cattle are healthy and, therefore, productive. To ensure this, a health programme is required and for it to be effective it should be planned according to animal susceptibility and the prevalence of external and internal parasites. The latter two factors are to a greater extent influenced by environmental factors (Maree & Casey, 1993). The importance of meticulously maintaining herd health as prescribed by veterinarians in an effort to control disease cannot be overemphasised.

Small-scale farmers use indigenous veterinary practices (ethno-veterinary medicine) in terms of livestock protection. According to Masika, Van Averbeke & Sonandi (2000) this is an old practice. Ethno-veterinarians (herbalists) diagnose, treat and prevent diseases in animals. Their diagnosis is influenced by the prevailing belief system and commonly relies on symptoms, post-mortem inspection of deceased animals and epidemiological observations. Treatment and prevention methods include herbal and other medicines, surgical methods such as wound care, bone-setting, blood-letting and cauterisation, as well as vaccination (Reijntjes, Haverkort & Water-Bayers, 1992).

2.4.5 Appropriateness of inputs

Available input technology in South Africa fails to match the financial constraints of small-scale farmers, their natural environment and farm management abilities. As a result

increased yields are achieved at unacceptably high-risk levels. Inappropriate inputs are highly correlated to liquidity constraints, which force many small-scale farmers to follow more conservative strategies that ensure stable yields, incomes and food security under less than ideal conditions (Chikanda & Kirsten, 1998).

Farmers are motivated to try new agricultural technologies and inputs only if they are well informed and convinced that such technologies would have a positive effect on their productivity and their lives. This is exhibited by the high migration rate of young people from rural to urban areas, leaving the small-scale agriculture to elderly people, most of whom are illiterate and in poor health, with low work capacity and limited technical skills (Chikanda & Kirsten, 1998).

2.4.6 The small-scale farmer's strategies to counteract production risk

A farmer's attitude to risk is influenced by many factors, including managerial abilities, age, education, level of income, and size of holding, amongst others. These factors obviously determine whether the farmer becomes averse to risk, neutral, or partial to risk (Nell, *et al.*, 1999).

- **Crops**

Farmers use several methods to spread the risk of germination or crop growth failure, namely ploughing / planting before the rains begin, at the onset of the rains, or after the rains begin.

Some farmers use a combination of these methods according to their individual circumstances. The effect is to ensure that at least some of the planting is successful. This is primarily because crop establishment is a particularly high-risk operation for small-scale farmers, who usually lack resources for rapid cultivation and planting. They usually depend on rentals (tractors, implements, etc.) and might receive the tractor only once the optimum time for planting has passed (Rowland, 1993).

Small-scale farmers follow more conservative strategies that ensure stable yields, incomes and food security under less than ideal conditions (Chikanda & Kirsten, 1998). These strategies include, amongst others, keeping a certain number of stock of assets, practising mixed farming or multiple cropping, controlling pests and diseases, weeding, etc. The multiple-cropping systems or mixed-farming methods reflect the farmer's

multiple objectives, such as survival and yield stability. Yield stability brings about food security, which is one of the most important objectives of the small-scale farmer (Rowland, 1993; Morokolo, Coetzee & Makhura, 1999).

Another strategy used by the small-scale farmer is diversification with different crops. The farmer tends to allocate more land to staple foods, vegetables and drought-resistant crops, which is a less risky and more labour-intensive method than the mono-crop agriculture favoured by commercial farmers. This could be due to fact that most small-scale farmers have access to family labour (Rowland, 1993).

- **Livestock**

Small-scale livestock farmers, whether consciously or unconsciously, employ several strategies to counteract risk. These involve business activities such as taxis, shops or spaza shops, welding, bricklaying, etc. (Maphalla & Salman, 2002). According to Theepe (2002 – personal communication) the main strategy is diversification. This is done in various forms such as mixed farming and diversification with different livestock enterprises.

2.4.7 Liberalisation

Liberalisation has brought about mixed reactions and fortunes amongst small-scale farmers. In South Africa, liberalisation is leading to a shift in maize production from the northern regions of Gauteng to the Eastern Cape, where rainfall is more reliable. Small-scale farmers in more marginal maize areas are instead seeking out alternative, perhaps higher value crops. This is done in an attempt to take advantage of market liberalisation (Poulton, Kydd & Harvey, 1999).

It is increasingly necessary to seek out opportunities for diversification from traditional food crops to establish small-scale farmers in an activity with reasonable prospects for growth and income generation. This change involves moving small-scale production out of a different level of technology and capitalisation. Making small-scale farmers more competitive will very often involve a considerable increase in the level of farm investment (Howe, 2000).

At the small-scale farmer level, liberalisation does not necessarily mean the prospect of continuing improved income from output. However, liberalisation very often does mean increased expenditure on inputs, which is largely due to the removal of subsidies. The effects of liberalisation have created a terrible crisis in the small-scale economy, which is only mitigated statistically by the fact that most small-scale farmers were too poor to use credit and all the required production inputs even before liberalisation. Some producers are benefiting, but not most of the poor. Small-scale farmers have not benefited from the new wave of globalisation of investment. Major investments will be necessary to establish small-scale agriculture and rural production on a competitive footing with large-scale agriculture and production (Howe, 2000).

Liberalisation has also resulted in an evolution in agricultural and development policies and strategies. This has led to a shift away from supply-led and interventionist policies towards a more liberal market-oriented approach. However, the small-scale farmer still finds it difficult to access formal, rural and agricultural credit (Jordaan, 2003).

CHAPTER 3

MATERIALS AND METHODS

3.1 STUDY SITE / LOCATION

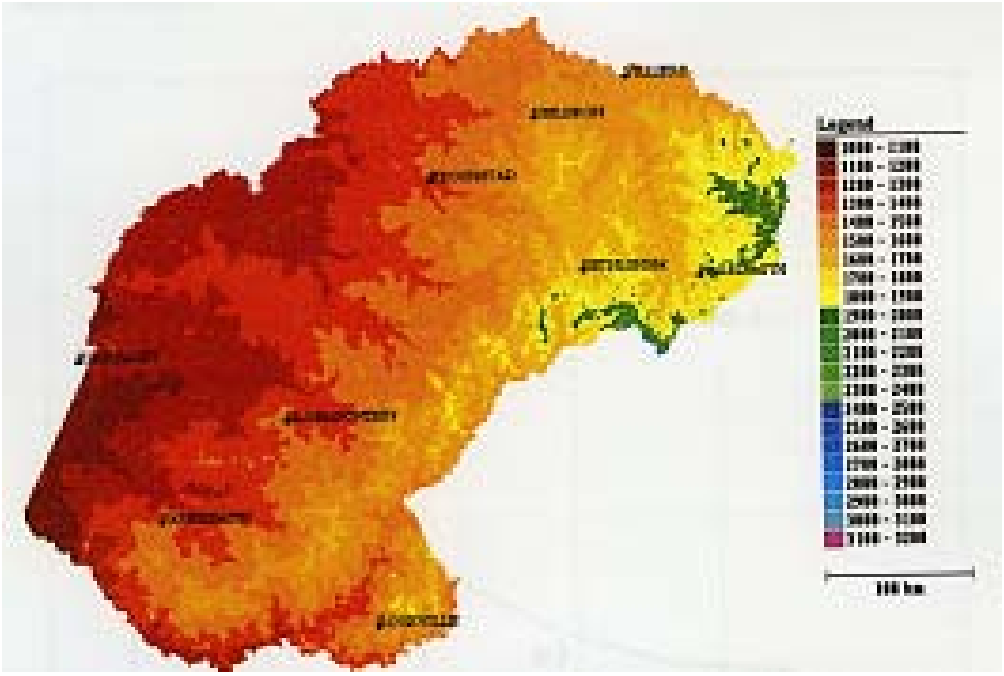
3.1.1 Agro-ecological conditions

3.1.1.1 Topography

The height above sea level (i.e. altitude) in the high-lying eastern and north-eastern areas of the Free State vary between 1000 to 1100m, and in the west to over 3 000m in the Drakensburg mountain range in the east. Topography in general is well suited for agricultural activities (Van den Berg & Manley, 2003 p.3).

3.1.1.2 Climate

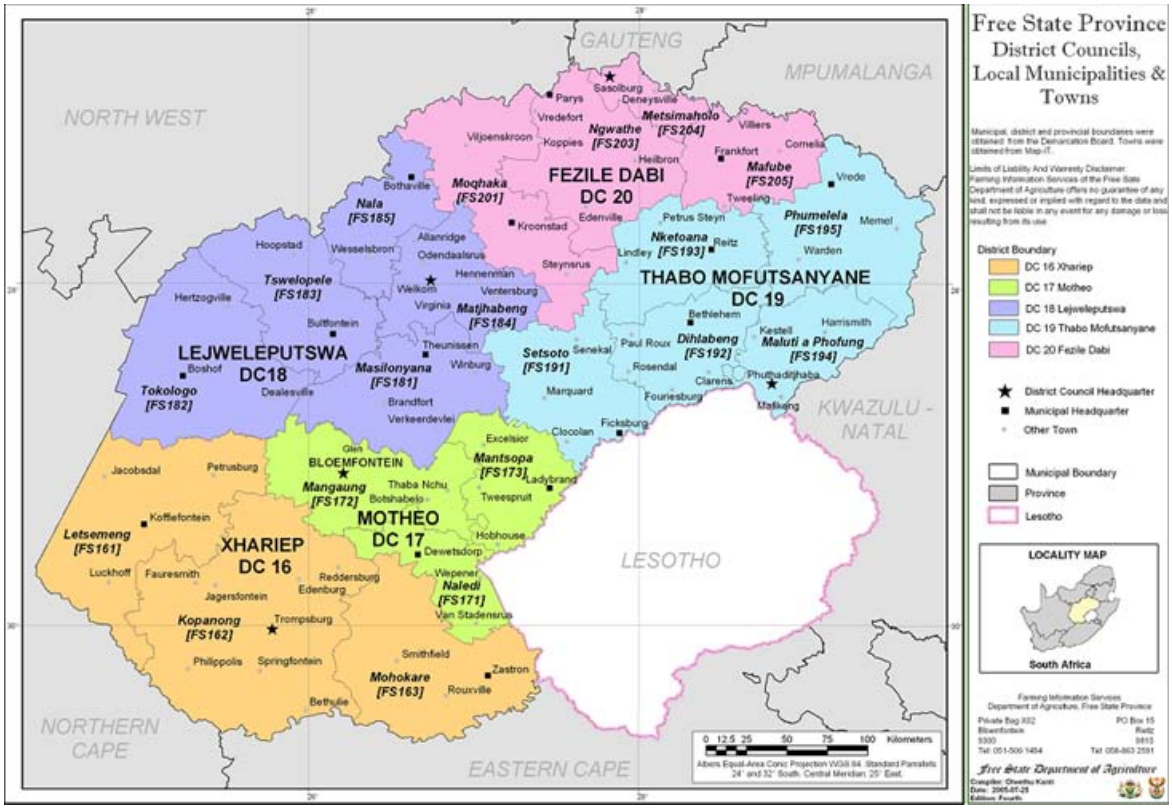
The Free State Province is characterised by many different climate regions, ranging from very hot, and semi-desert climate in the south-western and western parts to a relatively cool climate over the elevated eastern parts. Annual long-term average rainfall for the Free State varies between about 300mm in the extreme south-western Free State to nearly 900mm in mountains in the eastern parts. The annual median rainfall varies from about 250 – 300mm to about 900mm. The median rainfall values are more important in terms of decision making processes due to their conservative nature. The eastern and north-eastern higher rainfall areas enjoy temperate summers, but very cold winter nights and lengthy periods of frost occurrence, especially near the mountainous south eastern border. The annual long-term average maximum temperature for the Free State ranges from about 18^{o}C in the south-east to about 26^{o}C in the south-west (Potgieter, Le Roux, Van Biljon, Krige & Pretorious, 1995 & Van den Berg & Manley, 2003 p.2).



(Figure 3.1: Annual long-term average rainfall (mm) for the Free State)

3.1.1.3 The Free State Province in terms of district councils, local municipalities and towns

The Free State Province is divided into five magisterial districts, namely Xhariep, Motheo, Lejweleputswa, Thabo Mofutsanyana and Northern Free State. Within these districts are various towns and/or townships. Due to the uniformity of districts in terms of the farming enterprises of small-scale farmers, data were collected from nearly all regions of the Free State Province. Table 3.1 shows the distribution of questionnaires according to towns or townships, as well as the frequency and percentage of questionnaires completed in that particular town.



(Figure 3.2: Free State Province in terms of Local municipality and Districts boundaries)

Table 3.1 Number of questionnaires per town/township

Town / Township	Frequency	Percentage	Cumulative frequency	Cumulative percentage
Harrismith	4	8.0	4	8.0
Bethlehem	1	2.0	5	10.0
Bloemfontein	9	18.0	14	28.0
Zastron	2	4.0	16	32.0
Sannaspos	1	2.0	17	34.0
Brandfort	1	2.0	18	36.0
Kestel	1	2.0	19	38.0
Marquard	2	4.0	21	42.0
Ficksburg	2	4.0	23	46.0
Senekal	5	10.0	28	56.0
Thaba 'Nchu	6	12.0	34	68.0
Dewetsdorp	6	12.0	40	80.0
Bultfontein	2	4.0	42	84.0
Odendaalsrus	1	2.0	43	86.0
Hennenman	1	2.0	44	88.0
Botshabelo	1	2.0	45	90.0
Qwaqwa	5	10.0	50	100

3.2 DESCRIPTION OF TARGET FARMERS AND SAMPLE SELECTION

According to the Free State Department of Agriculture there are approximately 400 small-scale farmers in the province (Madiba, 2001 – personal communication). This figure excludes those who are farming in their backyards, those who have formed market gardens, and those who have applied for but not yet received land. Three hundred of these are farmers who received land in terms of Land Redistribution for Agricultural Development, while 100 others have either purchased their own farms or are leasing them.

A database of the above-mentioned farmers was obtained from different extension offices in the province. The farmers were grouped according to their enterprises, i.e. as crop, livestock and mixed (crop and livestock) farmers. Subsequently a representative sample was randomly selected from each group. Given the time and financial constraints, only fifty farmers were used in this study.

3.3 QUESTIONNAIRE DEVELOPMENT AND DATA COLLECTION METHODS

The first step was a literature study on farm management. In order to make a preliminary assessment of farmers' management standards and central problems, an experimental open-ended-type questionnaire was developed and discussed with a few farmers who were visited and interviewed, after which the necessary changes were made (See Appendix 1).

Some of the second-year Agricultural Management students of the Technikon Free State who were involved in experiential training were recruited to collect data. Some of these students collected data in the area where they were completing their practical training. The students were first divided into two groups of ten and trained in the administering of questionnaires, after which they were then given the questionnaires. During an interview with the farmers, an interviewer would sit down with an interviewee in his/ her holding and posed questions. As an interviewee responded the interviewer would write down the answers. Other questionnaires were administered by the researcher.

The questionnaire addressed the needs of the two objectives of the study. For the purposes of objective 1, the following factors were addressed in the questionnaire:

(a) External environmental factors that have an impact on the farmer, namely:
- Economic,
- Technological,
- Socio-economic,
- Natural,
- Political-legal, and
- International factors

(b) Internal environmental factors that have an impact on the farmer, namely:

- Management standards (biographical characteristics, capacity and skills, as well as incentives for motivation),
- Capital,
- Labour, and
- Land

The questionnaire included various types of questions with various types of scales. Biographical and other factors were obtained by means of nominal measuring. Free-reaction questions and open-ended questions were also included in the questionnaire. Open-ended questions were employed to give farmers an opportunity to express their opinions. The reason for the inclusion of open-ended questions was to provoke discussion. It was expected of the farmers to provide a motivation for some of their answers. In order to establish the knowledge, behaviour, attitudes, opinions and motivations of farmers, limited-action questions in the form of the Likert scale and the semantic differential technique were used (Kinnear & Taylor, 1979; Bolch & Huang, 1974; Mead & Curnow, 1983; Isaac & Michael, 1981).

In most cases the farmers' opinions with regard to various actions or activities were tested, in other words, a farmer mostly had to indicate on a semantic scale the extent to which he performed certain actions. The nature and level of farmers' management processes were investigated in order to determine whether there were any meaningful differences between the farmers. The nature means the type of practice that was applied and the level or extent to which the activity was performed. The latter is expressed as a percentage of a whole, e.g. "sometimes" is regarded as 25%, "fairly frequently" as 50%, "often" as 75% and "always" as 100%. This addressed the needs of the second objective.

3.4 STATISTICAL ANALYSIS USED

Statistical Analysis Systems Software (SAS Institute Inc, 1999) was used to analyse the data. Frequency statistics were used to group farmers' opinions. The relationship between two or more categorical variables was tested using the chi-squared statistics. The differences between farmers' opinions gathered in the form of continuous variables for the years 1994 and 2001 were tested using the t-test statistics.

3.5 EXPLANATIONS

In Figure 4.2 the effective number of randomly selected population size (N) is 50, because it included even those who said that they had annual plans, although not written ones.

In Figure 4.9 the effective sample size is 43 in 1994 and 44 in 2001. This is due to the fact that some farmers' responses were not relevant to the question of whether they had signed service contracts with their employees, implying that they did not make use of hired labour.

CHAPTER 4

RESULTS AND DISCUSSIONS

This chapter presents and discusses the external as well as internal management environmental factors of the respondents. It commences with a discussion of the biographic characteristics and land acquisition of the farmers. Also presented are the management practices of the respondents in the areas of production, marketing, finance and personnel.

4.1 ACADEMIC QUALIFICATIONS OF THE SAMPLE STUDIED

The highest academic qualifications of the farmers varied considerably, ranging from no schooling to a tertiary qualification. In general the majority (80%) of the farmers had at least some formal school training. Although 20% had no school training, some of them were able to read and write. It also emerged that 18% of the respondents were in possession of a post-matric qualification. The qualifications of the respondents are shown in Table 4.1.

Table 4.1 Highest academic education level of farmers

Level of education	Frequency	Percentage	Cumulative frequency	Cumulative percentage
No schooling	10	20	10	20
Primary education	9	18	19	38
Grades 8-10	11	22	30	60
Grades 11-12	11	22	41	82
Post-matric	9	18	50	100

These results differ slightly from the findings of Masiteng (2000). He found that almost 50% of the farmers surveyed had no formal school training, while the other 50% had formal school training, with three respondents having a post-matric qualification. In contrast to these findings, the current results show that six more people possessed a post-matric qualification. There is a possibility that the differences might be as a result of differences in sample size, study site and coverage.

4.1.1 Age and farming experience of the sample studied

The age of the population sample ranged from twenty-nine to seventy-eight years. The average age was 52 ± 12 years. The majority of the farmers interviewed were between 41 and 64 years of age.

The farming experience of the respondents ranged from 3 to 60 years with an average of 14 ± 13 years. The majority of the respondents had between 3 and 27 years of farming experience. The anomaly of 60 years of farming experience resulted from one of the respondents, who was 78 years of age, claiming to have started farming at the age of 18.

The researcher's results with regard to the age of the respondents differ slightly from the findings of Masiteng (2000) and those of Masika *et.al.* (2000) who found an average age of 49 and 58 years respectively. With regard to farming experience Masiteng (2000) found an average of 7.51 years. As indicated earlier the difference could be as a result of differences in sample size.

In general, the respondents were a mixture of relatively young, middle-aged and elderly people, with a fair distribution of farming experience.

4.1.2 Planning by the farmers

4.1.2.1 Annual plan

Respondents were asked whether they compile written annual plans. The majority of the farmers (68%) claim to have compiled written plans, which clearly describe their objectives. However, among those who said that they did not have written plans, some indicated that they were aware of what they wanted to achieve, albeit not in writing (Table 4.2).

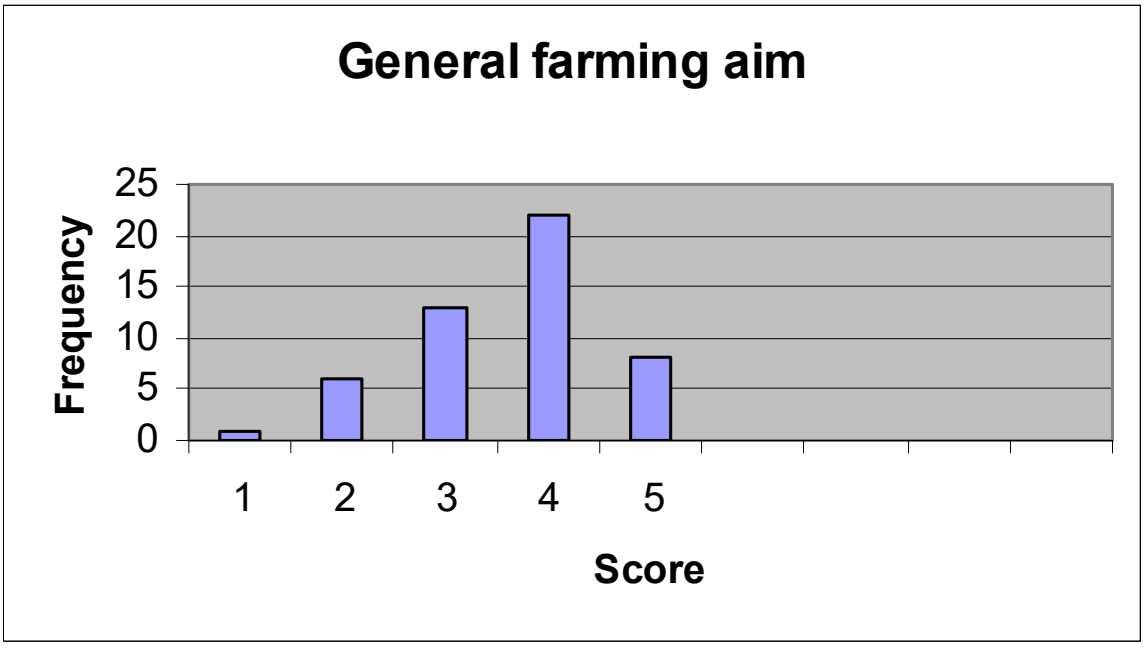
Table 4.2 Compilation of annual plans

Written annual plan	**%**
Yes	68
No	32

The fact the term “annual written plan” was not explained in detail to the respondents and that the invigilator did not verify the context of such written plans, may be responsible for the unrealistic high figure of 68%.

4.1.2.2 Formulation of general farming aim and objective

With regard to the general farming aim or objective of the farmers, the results show that the majority of the farmers (42%) had “sound” general farming objectives while those whose objectives were comprehensive accounted for 16% (Figure 4.1).



Scores used: 1 = poor, 2 = vague, 3 = better, 4 = sound and 5 = comprehensive

Figure 4.1 General farming aims of farmers

The majority of the farmers had “sound” (32%) and “comprehensive” (30%) long-term objectives respectively. This implies that most objectives did not meet the “smart” criteria, i.e. simple, measurable, achievable, realistic, and with a timeframe.

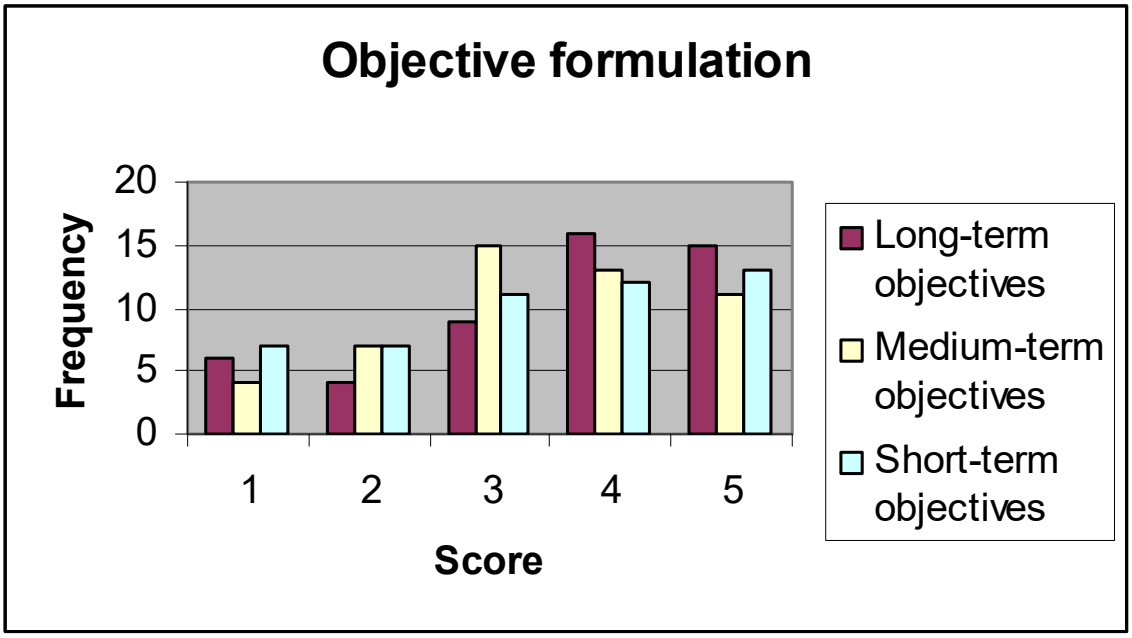


Figure 4.2 Long-, medium- and short-term objectives of farmers

The level of education of the farmers had no significant impact on annual planning. It is worth noting that amongst those with a post-matric qualification almost half had annual plans, while this percentage is higher with respondents with lower formal qualifications. The reason for this discrepancy is not known. However, it must be kept in mind that the respondents' perception of "written plan" was not verified (Table 4.3).

Table 4.3 Impact of level of education on annual farm planning

Level of education	Annual planning				Total	
	YES		NO			
	F	%	F	%	F	%
No schooling	7	70%	3	30%	10	20
Primary education	7	77.8%	2	22.2%	9	18
Grades 8-10	8	72.7%	3	27.3%	11	22
Grades 11-12	7	63.6%	4	36.4%	11	22
Post-matric	5	55.6%	4	44.4%	9	18
Total	50		50		50	100

F= Farmers

Boehlje and Eidman (1984), Buckett (1988) and Standard Bank SA (1999) indicate that planning is central to any business and should be accorded the priority it deserves if one is to succeed in one's business endeavours. This finding implies that it would be very difficult for the majority of the respondents to determine whether they are progressing or not. The findings also confirm the notion that some of the managerial factors do not depend on the ability to read and write.

4.2 LAND ACQUISITION AND OWNERSHIP BY FARMERS

4.2.1 Methods of land acquisition

The majority of the farmers (42%) purchased their land by means of bank loans while only 16% acquired their land through Land Redistribution for Agricultural Development (LRAD). Results are presented in Table 4.4.

Table 4.4 Methods used by farmers to acquire farmland

Means of acquisition	Percentage
Bank loans	42
Own money	18
LRAD	16
Inherited	6

4.2.2 Land ownership according to size

There was no significance difference in the average land size of farmers in 1994 and 2001 (see Table 4.5). However, in 1994, the largest land size owned by the farmers was 1 400 hectares while in 2001 it was 2 002 hectares. From 1994 to 2001 the largest land size grew by 602 hectares. In addition the minimum land size increased from 1 to 5 hectares, while two farmers became landowners in 2001. Even though the difference is not significant, this result shows that farmers acquired more land between 1994 and 2001.

Table 4.5 Mean land size of farmers in 1994 and 2001 respectively

Year	n	Mean ± Standard error (SE)	Minimum (ha)	Median (ha)	Maximum (ha)
1994[1]	48	269±49[a]	1	210	1 400
2001	50	327±48[a]	5	222	2 002

[1] Two missing values are due to the fact that two farmers became farm owners after 1994

[a] = Means with the same letters in the same column, are not significantly different (P>0.05).

n = Number of respondents

The results are consistent with the findings of Mukhala and Groenewald (1998), Nell *et al.* (1999) and Masiteng (2000). These authors state that the land size of small-scale farmers varies from less than one hectare to at least 500 or more hectares. This strengthens the fact that land size should not be the only factor considered when defining small-scale farmers, since the majority who remain in the same category in terms of production would not qualify as small-scale farmers.

4.2.3 Size of land ownership by level of education

The results reflect a particular trend in both 1994 and 2001, i.e. as the level of education rose, so the farm size increased proportionally. However, there was no significant change in trends of land size ownership by level of education between the two years (see Table 4.6).

Table 4.6 Mean and standard errors for land size by level of education for 1994 and 2001 respectively

Level of education	Year			
	1994		2001	
	(n)	Mean ± SE (ha)	(n)	Mean ± SE (ha)
No schooling	10	230±106	10	273±106
Primary education	8	265±118	9	314±111
Grades 8-10	11	272±101	11	303±101
Grades 11-12	10	254±106	11	204±101
Post-matric	9	324±112	9	501±112

(n) = Number of respondents

Based on these results it can be assumed that more educated farmers had relatively more income or access to credit facilities, enabling them to purchase more land than less educated or uneducated farmers. Such farmers might well have used this as a form of investment of income generated from other sources of employment opportunities.

4.3 CROP PRODUCTION

4.3.1 Farmers' knowledge of soil potential and soil analysis, and the implementation of the results

The farmers' responses regarding their knowledge of the soil potential of their farms are shown in Figure 4.3. In both 1994 and 2001 the majority of the farmers (82% and 58%, respectively) were unaware of the soil potential of their farms. However, compared to 1994 there was a 24% (x^2 $P<0.01$) improvement in 2001 in the number of farmers claiming to "know" their soil potential.

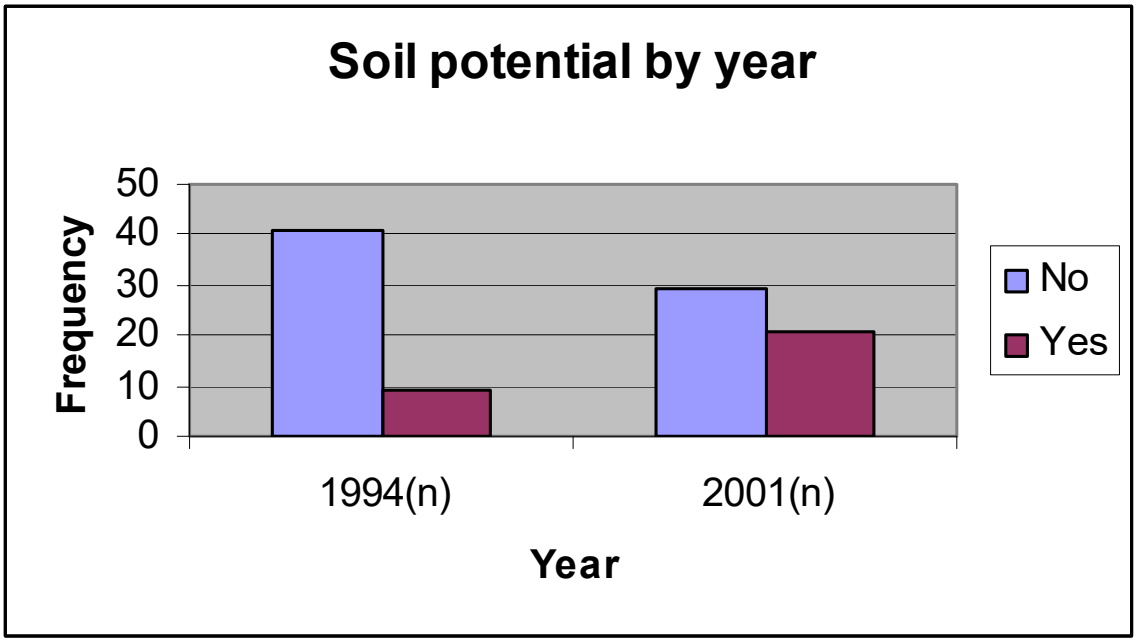


Figure 4.3 Farmers' knowledge of soil potential

In 1994 most farmers (67.6%) did not analyse their soil before planting. Even in 2001 the majority of farmers (40.5%) did not analyse their soil before planting (Table 4.7).

Table 4.7 Practice of soil analysis by farmers for 1994 and 2001 respectively

Practice of soil analysis	1994		2001	
	(n)	Percentage (%)	(n)	Percentage (%)
Not at all	25	67.6%	15	40.5%
Sometimes	5	13.5%	5	13.5%
Fairly often	0	0.0%	2	5.4%
Most of the time	2	5.4%	4	10.8%
Always	5	13.5%	11	29.7%
Total	37	100.0%	37	100.0%

(n) = Number of respondents

Compared to 1994, when we consider the number of farmers who did not analyse their soil and those who always analysed their soil before planting, there was a significant change in the number of farmers who always analysed their soil in 2001 (X^2=4.750 with 1df P<0.05 – Table 4.7.1).

Table 4.7.1 Response of farmers "not practising" and "always practising" soil analysis in 1994 and 2001 respectively

Practice of soil analysis	1994		2001	
	(n)	Percentage (%)	(n)	Percentage (%)
Not at all	25	67.6%	15	40.5%
Always	5	13.5%	11	29.7%
Total	37	100%	37	100%

(n) = Number of respondents

X^2=4.750 with 1degree of freedom (P<0.05)

The extent to which farmers implemented the soil analysis was also determined and the results are presented in Table 4.8.

Table 4.8 Implementation of soil analysis results by farmers for 1994 and 2001 respectively

Frequency of practice	1994		2001	
	(n)	Percentage (%)	(n)	Percentage (%)
Not at all	27	73.0%	41	55.4%
Sometimes	0	0.0%	0	0.0%
Fairly often	1	2.7%	6	8.1%
Most of the time	4	10.8%	11	14.9%
Always	5	13.5%	16	21.6%
Total	37	100%	74	100%

(n) = Number of respondents

The majority of the farmers (71.9%) did not implement the recommendations arising from the results of soil analysis in 1994. Again in 2001 the majority (34%) did not implement the recommendations. However, when comparing the number of farmers that implemented the recommendations with those who did not for the two periods, the change is significant (P<0.05), i.e. the percentage of farmers using the results of soil analysis increased from 16% in 1994 to 44% in 2001 (Table 4.8.1).

Table 4.8.1 Response of farmers not implementing and always implementing soil analysis results in 1994 and 2001 respectively

Frequency of practice	1994 (n)	Percentage (%)	2001 (n)	Percentage (%)
Not at all	27	84%	14	56%
Always	5	16%	11	44%
Total	32	100%	25	100%

X^2=6.372with 1deegres of freedom (P<0.01)

(n) = Number of respondents

There results indicate no significant improvement in terms of the implementation of practices such as soil sampling and the implementation of soil analysis recommendations by the small-scale farmers.

The above-mentioned factors are important to farmers, as knowledge of the soil potential would enable them to estimate the potential yield of a given soil. Soil analysis would provide them with information on the correct quantities of fertiliser required in relation to the crops they intend planting. In addition, the implementation of the results of the analysis would to some extent guarantee them a certain yield – even enabling farmers to secure market contracts for their produce.

Studies by other authors attribute the situation (farmers not practising the above) to a number of factors, including a lack of essential knowledge and skills regarding soil sampling and analysis; the fact that fertilisers are either not readily available or are too expensive; and the lack of accessibility to institutional credit and inputs. Again there was a possibility that some farmers were resorting to using manure instead of fertiliser, either due to a lack of funds or as a habitual or traditional practice (Howe, 2000).

4.3.2 Calculation of variable costs

In 1994 the majority of the farmers (48.65%) did not calculate the variable costs of their crop enterprise(s). In 2001 most farmers (35%) always calculated their variable costs while the same number (35%) did not calculate the variable costs at all. The results indicate a trend towards improvement in the practices of the farmers. Results are shown in Table 4.9 below.

Table 4.9 Calculation of variable costs by farmers for 1994 and 2001 respectively

Frequency of practice	1994 (n)	Percentage (%)	2001 (n)	Percentage (%)
Not at all	18	49%	13	35.5%
Sometimes	8	22%	3	8%
Fairly often	2	5%	3	8%
Most of the time	4	11%	5	13%
Always	5	13%	13	35.5%
Total	37	100%	37	100%

(n) = Number of respondents

The findings in respect of both variables, namely implementation of soil analysis recommendations and calculation of variable costs, confirm sentiments reported by Olivier and Masiteng (2003) that newly settled farmers need, amongst other things, support in terms of inputs, funding and managerial skills. Without the aforementioned support the chances of success are minimal, which would further tarnish the image of small-scale farmers.

4.3.3 Pest and disease control

In 1994 the majority of farmers (30%) did not control pests and diseases, while the same number did control them sometimes. Conversely, the majority (38%) of farmers always controlled pests and diseases in 2001 (Table 4.10). There was a significant change in trend in pest control practices from 1994 to 2001. Table 4.10.1 shows this change by comparing those farmers not practising pest and disease control and those always practising pest and disease control in 1994 and 2001.

Table 4.10 Farmers' responses regarding pest and disease control in crop production for 1994 and 2001 respectively

Frequency of practice	1994 (n)	Percentage (%)	2001 (n)	Percentage (%) (n)
Not at all	11	31%	5	16
Sometimes	11	31%	5	16
Fairly often	4	11%	4	8
Most of the time	2	5	9	11
Always	8	22%	14	22
Total	36	100%	37	74

(n) = Number of respondents

Table 4.10.1 Responses of farmers not practising and always practising pest and disease control in 1994 and 2001 respectively

Frequency of practice	1994 (n)	Percentage (%)	2001 (n)	Percentage (%)
Not at all	11	58%	5	26%
Always	8	42%	14	74%
Total	19	100%	19	100%

X^2=3.88 with 1deegres of freedom (P<0.05)

(n) = Number of respondents

Based on the findings, it can thus be assumed that change is indeed taking place, albeit gradually, which confirms the hypothesis that transformation in production technology necessary to achieve significant small-scale agricultural growth will take place, given time and the right incentives.

4.3.4 Determining the crops to plant

In 1994 the majority of the farmers (50%) based their decisions on the prevailing climatic conditions. In 2001 the figure doing so declined by 15%, yet the majority (35%) continued to base their decisions on such conditions (see Table 4.11).

Table 4.11 Farmers' practice of determining which crops to plant in 1994 and 2001 respectively

Options	1994 (n)	Percentage (%)	2001 (n)	Percentage (%)
Personal needs	4	11%	4	11%
Climate	17	46%	13	35%
Rotational needs	2	5%	4	11%
Do not know	1	3%	0	0%
Neighbours	5	13%	6	16%
Market	8	22%	10	27%
Total	37	100%	37	100%

(n) = Number of respondents

These figures imply that most farmers were significantly affected by the physical environment, which is an environment over which the farmer has no control. The hypothesis that the small-scale farmer is not free to act as he pleases due to certain physical factors (amongst other things) prohibiting him from doing so, holds true in this regard.

4.3.5 Advisors on crop matters

Most farmers (41% and 43% in 1994 and 2001 respectively) were given advice by either the extension officers or the ARC institutes (Table 4.12). A substantial number (38% in 1994 and 32% in 2001) indicated that they did not receive any advice whatsoever.

Table 4.12 Farmers' advisors on crop matters for 1994 and 2001 respectively

Advisors	1994 (n)	Percentage (%)	2001 (n)	Percentage (%)
Co operatives	3	8%	5	13.5%
Farmer himself	14	38%	12	32%
Neighbours / family members	4	11%	5	13.5%
Extension officers / ARC	16	43%	15	41%
Total	37	100%	37	100%

(n) = Number of respondents

Based on these findings, the hypothesis that small-scale farmers are poorly served by extension officers could be regarded as a moot point. But what is apparent is that there is a need for extension officers to do more, which confirms the assertion by Chikanda and Kirsten (1998) that the farmer-to-extension-agent ratio is highly disproportional. This is evident in the 37.84% of farmers in 1994 and 32.43% of farmers in 2001 that received no advice whatsoever. The findings also highlight an important farmer-to-farmer linkage or relationship that could be optimally utilised by the development agents.

4.4 LIVESTOCK PRODUCTION

4.4.1 Farmers' knowledge of the carrying capacity of their farms

In 1994 most farmers (43.5%) were not aware of the carrying capacity of their farms, while at same time almost 40% were aware thereof. In contrast, in 2001 the majority (54%) were aware of the carrying capacity of their farms, which is a marked improvement of 14.4% (Table 4.13). Statistically, there was no significant change ($P>0.05$) between the two years (Table 4.13).

Table 4.13 Farmers' level of knowledge regarding the carrying capacity of their farms for 1994 and 2001 respectively

Knowledge of carrying capacity	1994 (n)	Percentage (%)	2001 (n)	Percentage (%)
None at all	20	43%	11	24%
25%[1]	0	0%	1	2%
50%	4	9%	3	7%
75%	4	9%	6	13%
100%	18	39%	25	54%
Total	46	100%	46	100%

[1] Refers to the degree to which farmers are aware of the carrying capacity

(n) = Number of respondents

4.4.2 Livestock culling by farmers

The majority of the farmers (34.78% and 58.69% in 1994 and 2001 respectively) knew which animals to cull, or rather followed certain criteria when culling their animals. There was an increase of 24% from 1994 to 2001 in the number of farmers who said they "always" followed certain criteria when culling their animals (Figure 4.4)

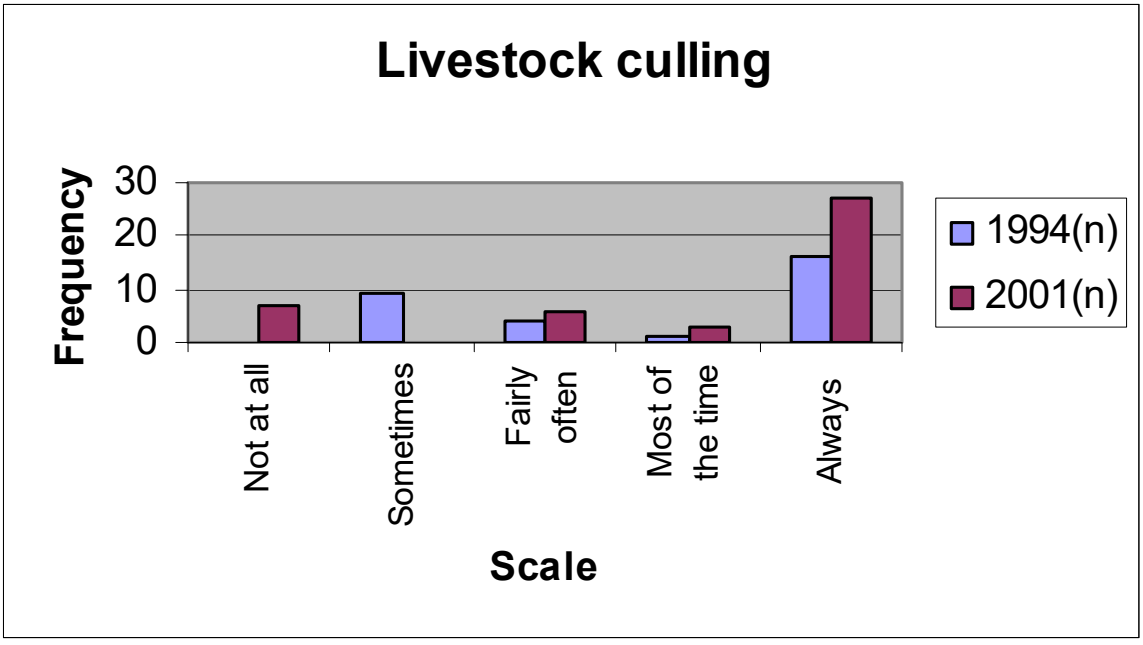


Figure 4.4 Farmers' criteria for culling livestock

Although the results show no significant change between the two years, it is evident that there was a shift in a positive direction.

4.4.3 Livestock immunisation programme

The majority of the farmers (43.5%) did not follow an immunisation programme in 1994, while the majority (41.3%) always followed such a programme in 2001. Overall, there was no statistically significant difference when considering the population sample as a whole (Table 4.14). However, a trend and a significant change were evident as shown by the increase in the number of respondents who said they "always" followed an immunisation programme (Table 4.14.1).

Table 4.14 Immunisation programme for 1994 and 2001 respectively

Immunisation programme	1994		2001	
	(n)	Percentage (%)	(n)	Percentage (%)
Not at all	20	43.5%	13	28.3%
Sometimes	8	17.4%	4	8.7%
Fairly often	4	8.7%	5	10.9%
Most of the time	3	6.5%	5	10.9%
Always	11	23.9%	19	41.3%
Total	46	100.0%	46	100.0%

(n) = Number of respondents

Table 4.14.1 Responses of farmers not following and always following an immunisation programme by year

Immunisation programme	1994		2001	
	(n)	Percentage (%)	(n)	Percentage (%)
Not at all	20	64.5%	13	40.6%
Always	11	35.5%	19	59.4%
Total	31	100%	32	100%

(n) = Number of respondents

The non-use of an immunisation programme by some farmers could be the result of more than one factor. Firstly, it could be due to the high cost of medicine and not ignorance, as suggested by Walker (1999). Secondly, it could also be due to the complexity of the significant initial financial, human capital, managerial and labour requirements (Nell, 1998).

Thirdly, as reported by Masika *et al.* (2000), it could also be due to some farmers' reliance on herbal remedies. Masika *et al.* (2000) found that the use of herbal remedies was still widespread among small-scale farmers, because such remedies are inexpensive, available locally, and convenient to administer.

4.4.4 Livestock feeding

The results show that in 1994 the majority of the respondents (23.91%) did not feed their animals according to the production stage. On the contrary, in 2001 the majority (39.13%) always fed their animals according the production level and stage (Table 4.15). Overall, the results show no meaningful difference between the two years with regard to livestock feeding practices (Table 4.15).

Table 4.15 Livestock feeding according to production stage for 1994 and 2001 respectively

Livestock feeding	1994 (n)	Percentage (%)	2001 (n)	Percentage (%)
Not at all	18	39%	11	24%
Sometimes	8	17%	8	17.39%
Fairly often	5	11%	7	15%
Most of the time	3	7%	2	4.35%
Always	12	26%	18	39%
Total	46	100%	46	100%

(n) = Number of respondents

Based on these results an assumption could be made that a substantial number of the respondents could not afford to feed their animals according to their production stage due to financial and other constraints, as pointed out by Nell (1998), and also due to limited access to grazing and a shortage of supplemental feeding, as indicated by Walker (1999).

4.4.5 Farmers' knowledge of the financial contribution made by livestock

In 1994 the majority of the farmers (39%) were unaware of the financial contribution made by their livestock enterprise(s), while a substantial percentage (22%) were "100% aware" thereof. In contrast, in 2001, the majority (37%) were "100% aware" of the financial contribution of their livestock branch. Between 1994 and 2001 there was a 23% increase in the number of farmers who claimed to be "100% aware" of the financial contribution of their livestock branch; however, the change was statistically insignificant ($P>0.05$ – Figure 4.5).

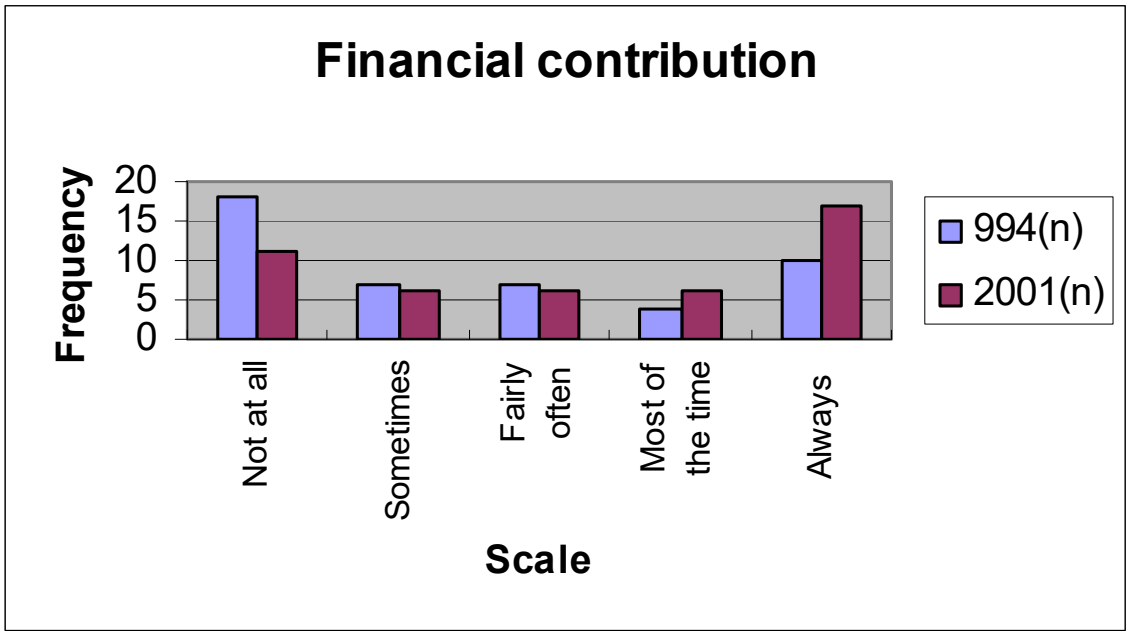


Figure 4.5 Farmers' knowledge of the financial contribution made by livestock to the farm income in 1994 and 2001 respectively

4.4.6 Livestock mating methods employed by farmers

The majority of the farmers (96%) used a bull in 1994, and even in 2001 this method was still employed by the majority (85%) of farmers. There was no statistically significant difference between the two years in respect of the farmers' practices regarding mating (Figure 4.6).

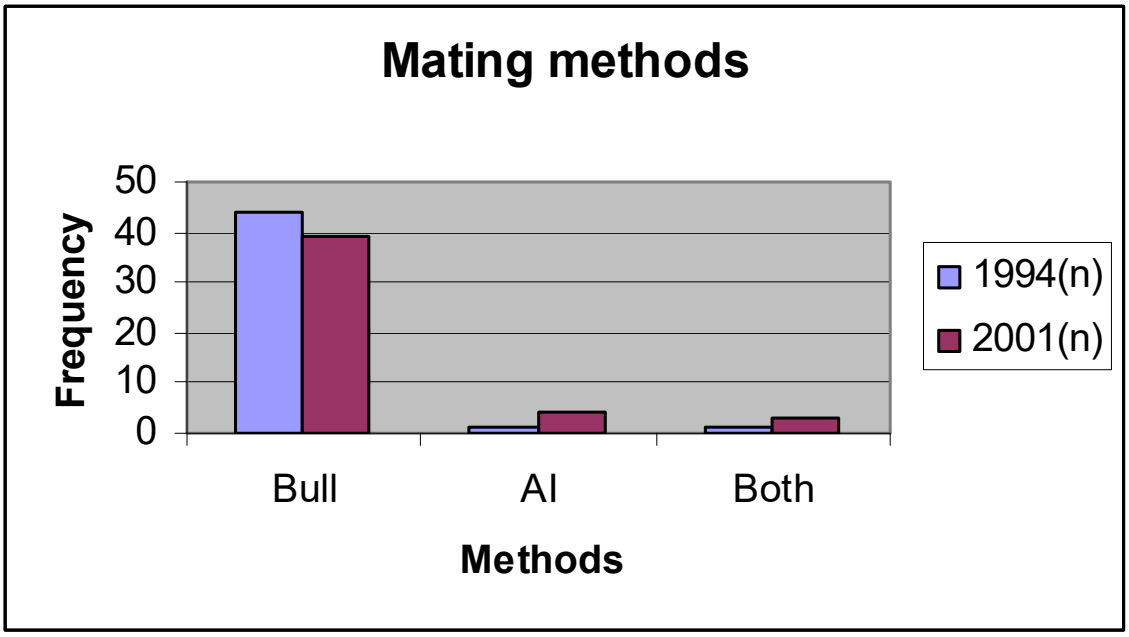


Figure 4.6 Livestock mating methods employed by farmers

The results confirm the finding of Nell (1998), Walker (1999) and Masiteng (2000) that the majority of small-scale farmers prefer to use a bull rather than artificial insemination (AI). Nell (1998) goes on to say that if farmers are to change their practices, researchers must develop new technologies which, at an early stage, will provide sufficient economic incentives at low risk, with lower financial, human capital, managerial and labour requirements that will be more attractive to farmers.

4.5 MECHANISATION

4.5.1 Tractor ownership among farmers

Figure 4.7 below shows that in 1994 the majority of the farmers (58%) had tractors and that this number rose by 10% in 2001 (X^2=7.760 with 1 dif P<0.01). The change was significant.

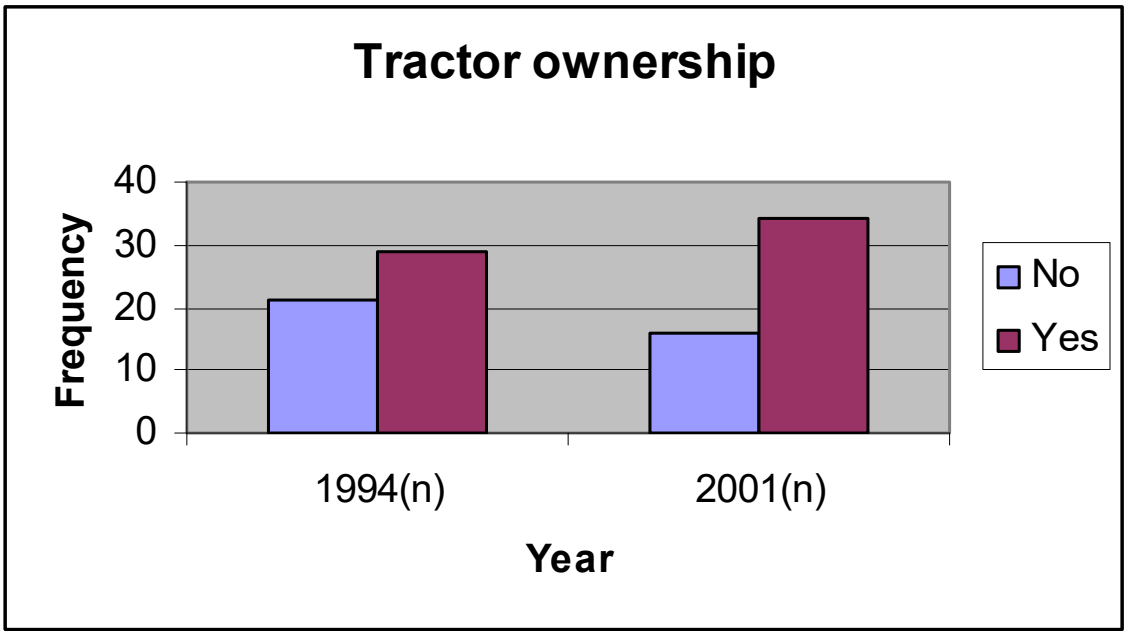


Figure 4.7 Tractor ownership for 1994 and 2001 respectively

4.5.2 Implement ownership among farmers

The majority (60%) of the farmers owned implements in 1994. Between 1994 and 2001 there was a significant increase of 18% in implement ownership among farmers (X^2 <0.01 – Figure 4.8).

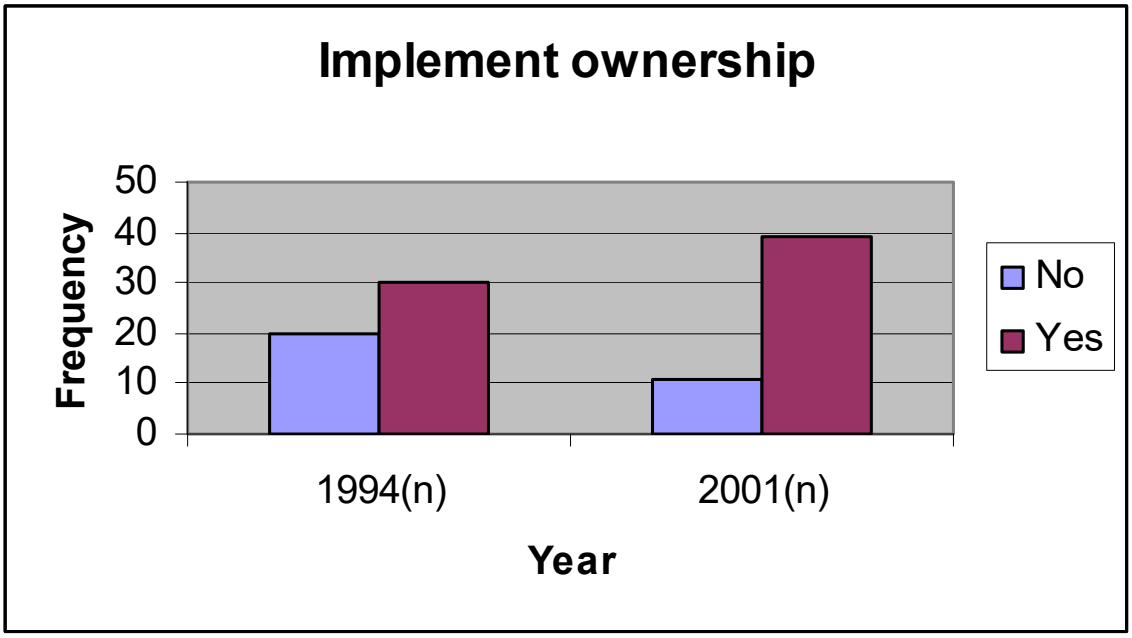


Figure 4.8 Implement ownership for 1994 and 2001 respectively

The findings show that the situation has changed since the time when Rowland (1993) indicated that the majority of small-scale farmers depend on hiring. The findings confirm once again that small-scale farmers are responsive to change.

It should be noted, however, that there is a possibility that a high number of those tractors and/or implements might not be in good working order, as Mukhala and Groenewald (1998), Nell *et al.* (1999) and Masiteng (2000) have found. Nonetheless, the findings confirm the hypothesis that transformation in production technology and productivity, necessary to achieve high small-scale agricultural growth, will take place, given time and the right incentives.

4.6 LABOUR MANAGEMENT

4.6.1 Labour employment, service contracts, employee remuneration and seasonal and family labour

On average each farmer employed 2.76 people in 1994, while in 2001 each farmer employed 4.12 labourers. In 1994 most farmers employed between 1 and 6 employees while in 2001 most farmers employed between 1 and 10 employees. The differences were not statistically significant (X^2>0.05). It is apparent that the farmers were able create and sustain jobs, while others went even further and created additional jobs.

In 1994 the farmers employed on average 2.46 people on a permanent basis, while in 2001 the farmers employed on average 3.56 people on a permanent basis.

With regard to service contracts, 17% ($P<0.01$) more people signed service contracts with their employees in 2001 than in 1994 (11% in 1994 vs. 28% in 2001 – Figure 4.9).

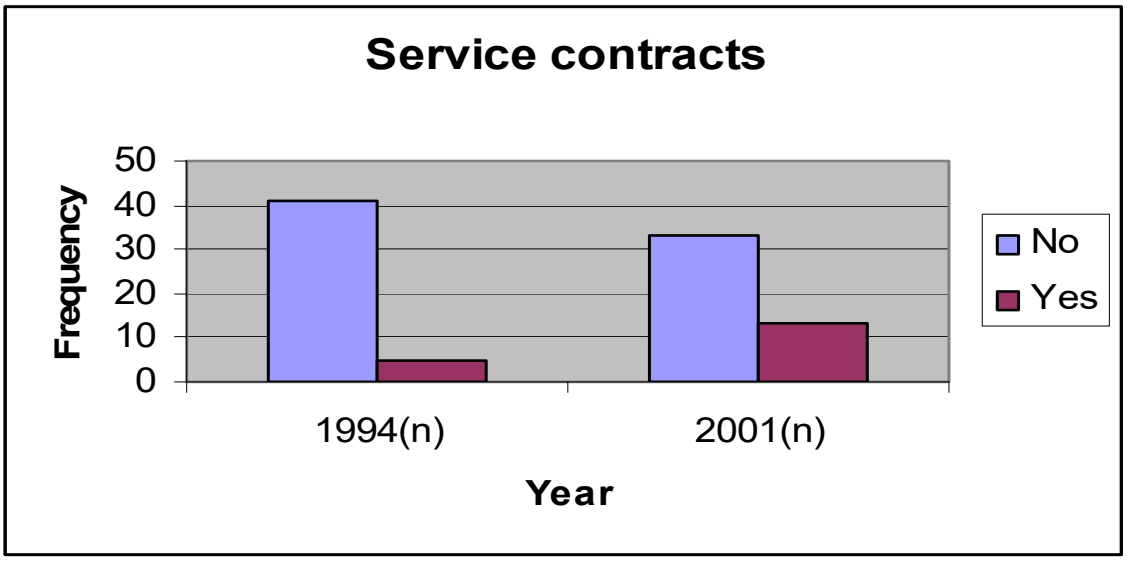


Figure 4.9 Service contracts for 1994 and 2001 respectively

These findings are consistent with the findings of Masiteng (2000) who found that the majority of small-scale farmers had not entered into contracts with their employees. He further asserts that it is crucial that the farmers establish the viability of their enterprises prior to entering into such contracts. But over and above this, compliance with the Basic Conditions of Employment Act should be a prerequisite among farmers.

For farmers to be able to implement the law (labour) and at the same time foster good relations with their employees, it is imperative that after having established the viability of their enterprises, they employ a minimum number of workers and use more contract or seasonal workers. This would ensure that they contain their labour costs while at the same time not curtailing the normal production flow. It will also help them to comply with the labour requirements.

In both 1994 and 2001 the majority of employees (50% and 44% respectively) were paid according to the employees' knowledge and experience or the type of job done. Another approach that seemed to be popular among the respondents was standard wage

applicable in the area of their operation followed by a negotiated agreement. In all categories the differences between the two years were, however, not statistically meaningful (P>0.05 – Table 4.16).

Table 4.16 Factors determining employees' wages for 1994 and 2001 respectively

Factor	1994		2001	
	(n)	Percentage (%)	(n)	Percentage (%)
Affordability	3	6.0%	4	8.0%
Employees' knowledge / type of job / experience	25	50.0%	22	44.0%
Standard wage in the area	10	20.0%	10	20.0%
Negotiated agreement	12	24.0%	14	28.0%
Total	50	100.0%	50	100.0%

(n) = Number of respondents

The two most popular approaches employed by the respondents in determining employees' wages are sound, realistic, and to some extent acceptable, since they limit the chance or possibility of confrontation between employer and employee, even though they do not necessarily comply with labour law requirements. On the premise of what is suggested by Van Reenen *et al.* (1995) this finding suggests that what the majority of the respondents (50% for 1994 and 44% for 2001) were doing was in line with general labour management practices. However, they still need to augment that with the labour law directives.

In 1994 the majority of the farmers (40%) had no family members in their employ, while in 2001 the majority (38%) always had family members in their employ. In both 1994 and 2001 the farmers had a minimum of 1 family member in their employ. The change between 1994 and 2001 in this regard was, however, insignificant (X^2=0.915, P>0.05).

Table 4.17 Family members employed by farmers for 1994 and 2001 respectively

Farmers' responses	1994 (n)	Percentage (%)	2001 (n)	Percentage (%)
Not at all	20	40%	16	32%
Sometimes	13	26%	14	28%
Fairly often	2	4%	1	2%
Always	15	30%	19	38
Total	50	100%	50	100%

(n) = Number of respondents

The fact that the majority of the respondents (40%) did not have family members in their employ in 1994 confirms the findings of D'Haese and Mdula (1998), Fenwick and Lyne (1999) and Masiteng (2000) who state that potential profits are low in farming and as a result more skilled and mobile members of households have a competitive advantage in off-farm employment. This constitutes a threat in respect of continuity of farming operations should those who are currently involved pass away or be unable to continue due to ill health. On the other hand, the 2001 findings (38% who always had family members in their employ) bring a sense of hope with regard to the continuity of the family enterprise, since more family members were involved in farming activities.

The majority of the farmers (42% and 38% in 1994 and 2001 respectively) did not use seasonal labour in their farming operations (Table 4.18). A substantial number (30%) of farmers used such labour in 2001. Most farmers used a minimum of 1 and a maximum of 2 seasonal labourers in 1994, while in 2001 most farmers used a minimum of 1 and a maximum of 3 seasonal labourers. However, the difference between the two years is insignificant ($P>0.05$).

Table 4.18 Seasonal labour for 1994 and 2001 respectively

Farmers' responses	1994 (n)	Percentage (%)	2001 (n)	Percentage (%)
Not at all	21	42%	19	40
Sometimes	16	32%	13	29
Fairly often	0	0%	1	1
Most of the time	2	4%	2	4
Always	11	22%	15	26
Total	50	100%	50	100%

(n) = Number of respondents

These findings regarding the use of seasonal labour by farmers dispute the finding of Phadime and Makhura (2000) that small-scale farmers rely on seasonal labour. The farmers' reasons for not using seasonal labour are, however, not apparent. There could be a host of reasons such as lack of capital, as well as sufficient family labour, as indicated in Table 4.16.

4.6.2 Labour law implementation

Most farmers (68%) did not implement labour legislation in 1994. Conversely, in 2001 the majority (36%) did implement it sometimes or 25% of the time. It is evident that more farmers started implementing the legislation in various ways in 2001 (refer to Table 4.19).

Table 4.19 Implementation of labour legislation for 1994 and 2001 respectively

Farmers' responses	1994 (n)	percentage (%)	2001 (n)	percentage (%)
Not at all	34	68%	14	28%
Sometimes	6	12%	18	36%
Fairly often	4	8%	6	12%
Most of the time	4	8%	7	14%
Always	2	4%	5	10%
Total	50	100%	50	100%

(n) = Number of respondents

The findings confirm the assertion by Groenewald (1996) that agriculture has long been exempt from much labour legislation, including the Basic Conditions of Employment Act and the Labour Relations Act. He goes on to say that this trend has now passed and that, unlike in the past, workers are now in a position to present a unified front. Obviously many farmers who still do not implement these legislations would regard them as a threat – more so if they lack either the knowledge and/or the financial capacity to implement them.

Based on the findings it can be assumed that the majority of the farmers did not organise training for their employees due to the fact that the majority (67%) of farmers had no access to advisors on labour matters, as reflected in Table 4. 20.

4.6.3 Advisors on labour matters

Most farmers (70% in 1994 and 64% in 2001) had no access to advisors on labour matters. A relative small percentage (22% and 30% in 1994 and 2001 respectively) indicated that they were given advice by extension officers and the like (Table 4.20).

Table 4.20 Farmers' advisors on labour matters for 1994 and 2001 respectively

ADVISOR(S)	1994 (n)	Percentage (%)	2001 (n)	Percentage (%)
No advisor	35	70%	32	64%
Extension officer(s) / bookkeeper(s)	11	22%	15	30%
Family member(s) / other farmer(s)	4	8%	3	6%
Total	50	100%	50	100%

(n) = Number of respondents

The findings confirm the notion by Groenewald (1996) that information in this respect is still lacking.

4.7 FINANCIAL MANAGEMENT

4.7.1 Compilation of balance sheets, enterprise budgets, income statements and cash-flow statements by farmers

Figure 4.10 shows the percentage of farmers keeping balance sheets for their farming activities. Compared to 1994, there was a significant ($P<0.05$) improvement in the number of farmers keeping balance sheets in 2001 (30% in 1994 vs. 54% in 2001).

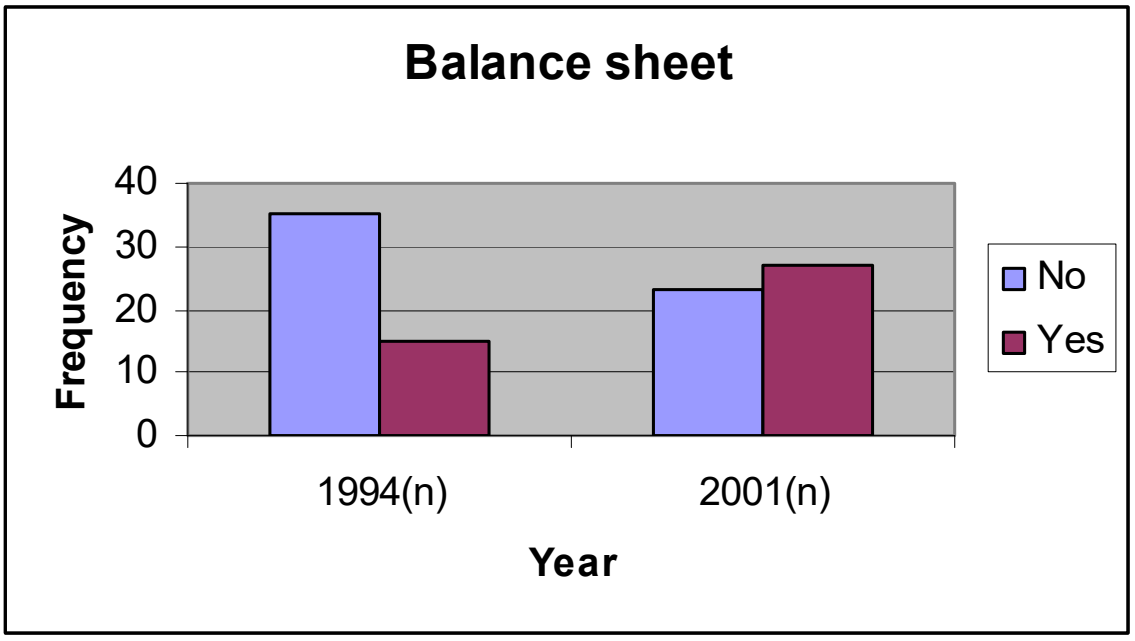


Figure 4.10 Compilation of balance sheets in 1994 and 2001 respectively

Figure 4.11 shows the percentage of respondents who drew up enterprise budgets. Again, compared to 1994, there was a significant increase ($P<0.05$) in the number of farmers who drew up enterprise budgets in 2001 (46% in 1994 vs. 54% in 2001). The discrepancy between the percentage of farmers who indicated that they did not calculate variable cost (paragraph 4.3.2) and majority that compiled enterprise budget could be as a result of that fact that some of the farmers were being assisted by either accountants or extension officers regarding financial matters (Table 4.21).

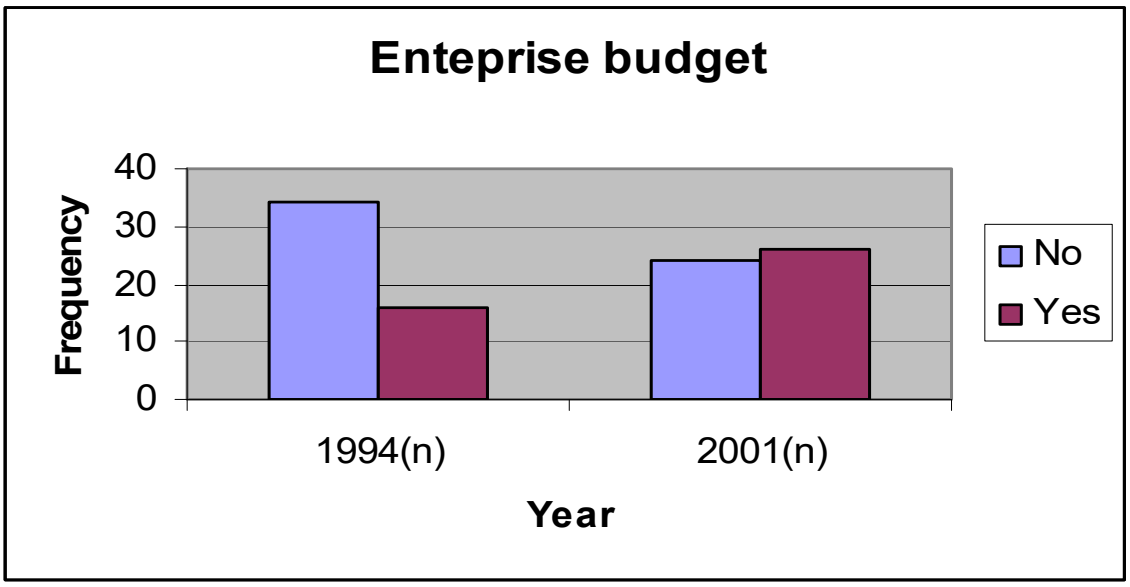


Figure 4.11 Compilation of enterprise budgets in 1994 and 2001 respectively

In 2001 the majority (46%) of farmers also compiled income statements for their farms, as compared to 32% in 1994 ($P<0.05$ – Figure 4.12).

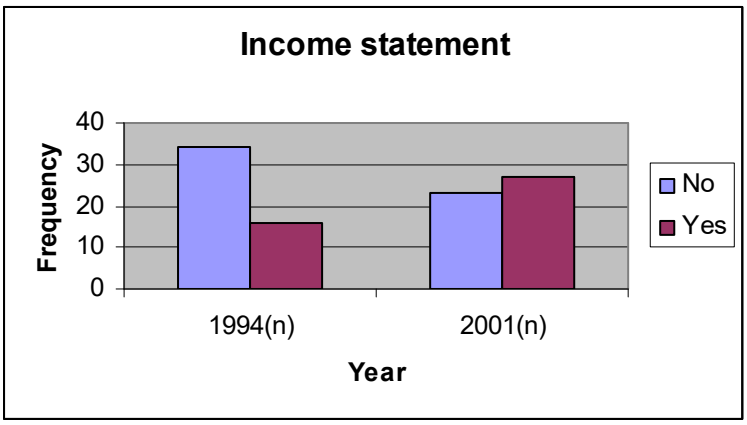


Figure 4.12 Compilation of income statements in 1994 and 2001 respectively

Compared to 46% in 1994, the majority (54%) of farmers compiled cash-flow statements in 2001 ($P<0.05$). The results are presented in Figure 4.13 below.

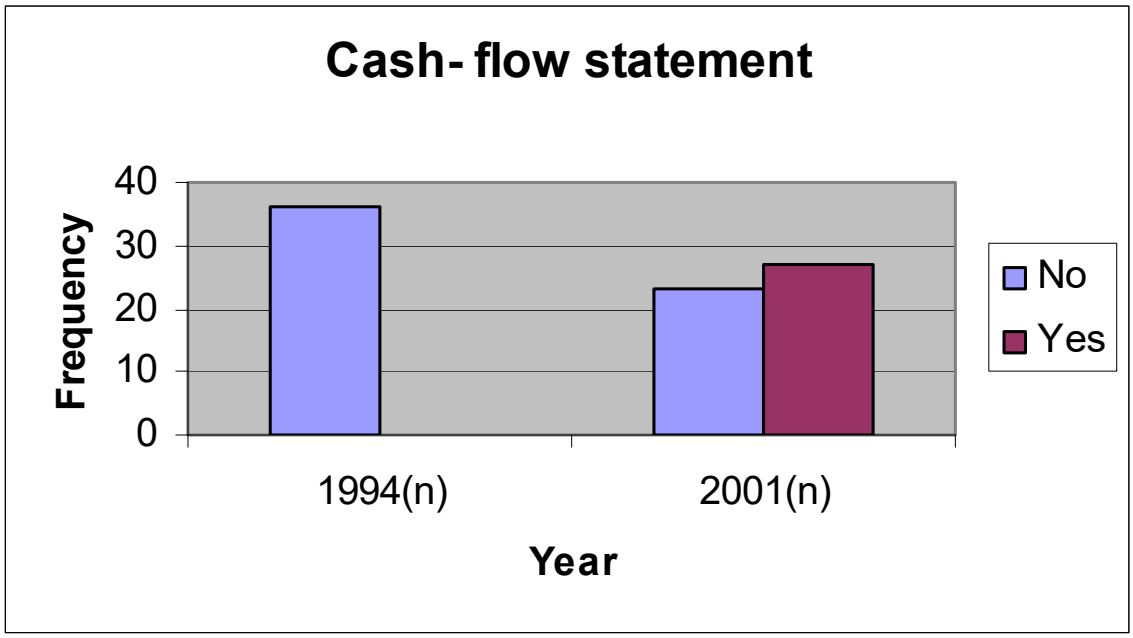


Figure 4.13 Compilation of cash-flow statements in 1994 and 2001 respectively

The findings with regard to the above-mentioned variables (enterprise budget and income and cash-flow statements) indicate that the majority of the farmers are responding to these changing times, which require financial management systems to be in place. Some might have learned from past experiences such as being denied loans by financial institutions and other sources. By drawing up balance sheets and other related statements, farmers are able to make informed decisions and/or take calculated risk(s).

All these factors support the hypothesis that small-scale farmers are rapidly entering the market economy and are highly responsive to the changes taking place.

4.7.2 Financial advisors

In 1994 the majority (74%) of the farmers had no financial advisors, and in 2001 the majority (54%) were still without financial advisors ($P>0.05$). Accountants and extension officers were responsible for providing most of the advice (Figure 4.21).

Table 4.21 Farmers' financial advisors for 1994 and 2001 respectively

Advisor(s)	1994 (n)	Percentage (%)	2001 (n)	Percentage (%)
No advisors	37	74%	27	54%
Family member(s)	1	2%	3	6%
Accountant(s) / extension officer(s)	12	24%	20	40%
Total	50	100%	50	100%

(n) = Number of respondents

The percentage of respondents who did not receive financial advice whatsoever is still unacceptably high, and as such warrants serious attention from those in authority. Without support, the chances of success are minimal, and for these farmers, farming might become an uneconomical option, as asserted by Carnegie, Du Toit, Goldman, Marumo, Moahloli and Wilke (1997).

Equally important is managerial skills training for these farmers at both farm and institutional level, as emphasised by Olivier and Masiteng (2003). This is particularly true where money is involved, since one can hardly progress if one does not know one's financial position. Without that knowledge farmers would not know when to exploit opportunities at their disposal and when to be more conservative in their approach.

4.7.3 Sources of production finance

4.7.3.1 Financial acquisition

The majority of the farmers (56% and 44% in 1994 and 2001 respectively) had to sell their animals in order to continue their farming operations. There was no significant difference between the two years in terms of financial acquisition (P>0.05 – Table 4.22).

Table 4.22 Financial acquisition for 1994 and 2001 respectively

Options	1994 (n)	Percentage (%)	2001 (n)	Percentage (%)
Own money	33	66%	27	54%
Borrowed from banks / Land Bank	11	22%	17	34%
Government grants / co-operatives	5	10%	4	8%
Family	1	2%	2	4%
Total	50	100%	50	100%

(n) = Number of respondents

4.7.3.2 Factors that negatively affected farmers when borrowing capital

Table 4.23 shows that some (18%) of the respondents who borrowed money from the banks in 1994 were negatively affected by collateral and/or repayment capacity. In 2001 the figure rose to 20%. In 2001 another 20% were negatively affected by interest rates. A few individuals (4% in 1994 and 2% in 2001) indicated that they were asked by the lending institution whether they possessed any farming knowledge and experience. This change was statistically insignificant (P>0.05).

Table 4.23 Impediments to financial acquisition for 1994 and 2001 respectively

Option	1994		2001	
	(n)	Percentage (%)	(n)	Percentage (%)
None	8	16.0%	9	18.0%
Never borrowed money	29	58.0%	20	40.0%
Guarantee (repayment capacity) / collateral	9	18.0%	10	20.0%
Farming knowledge / experience	2	4.0%	1	2.0%
Interest rates	2	4.0%	10	20.0%
Total	50	100.0%	50	100.0%

(n) = Number of respondents

The findings indicate that those who borrowed money were negatively affected by collateral or interest rates. This was probably due to the high inflation rate at the time, which pushed up the cost of inputs, including the cost of borrowed money.

The fact that some farmers were asked whether they had any farming knowledge and experience, is in accordance with the normal criteria set for loan application/granting. However, Jordaan (2003) cautioned that some bank managers without a good understanding of the applicant's culture must be careful not to be misled by the appearance of the applicant and subsequently draw inaccurate conclusions.

4.7.3.3 The most critical factors

The majority (28%) of the farmers who attempted to borrow money in both 1994 and 2001 were negatively affected by collateral. Four percent in 1994 and 6% in 2001 were mostly affected by high interest rates. Nonetheless, the change was statistically not significant (P>0.05).

Table 4.24 Most critical factors that negatively affected farmers in 1994 and 2001 respectively

Factors	1994 (n)	Percentage (%)	2001 (n)	Percentage (%)
None	8	33.33%	9	35%
Collateral / repayment capacity	14	58.33%	14	54%
Interest rates	2	8.33%	3	11%
Total	24	100%	26	100%

(n) = Number of respondents

The results confirm the assertion by Jordaan (2003) that the most critical factor that impedes the majority of small-scale farmers is the appraisal criteria imposed by the financial institutions. The institutions put those systems in place in order to avert or reduce risk on their side, but unfortunately at the expense of the applicants. This is done without taking into consideration the background of the applicant. It is high time that a mutual solution is found that will address the concerns of financial institutions while at the same time resolving the farmers' problems in this regard.

Again, this result confirms the finding of Fenwick and Lyne (1999) and Jordaan (2003) that small-scale farmers hardly ever qualify for production finance on the open market due to conventional appraisal criteria imposed by credit institutions.

4.7.3.4 Farmers who received financial assistance and those who did not

The majority of the farmers (78% in 1994 and 64% in 2001) never received any form of financial assistance (P>0.05). Figure 4.14 below refers.

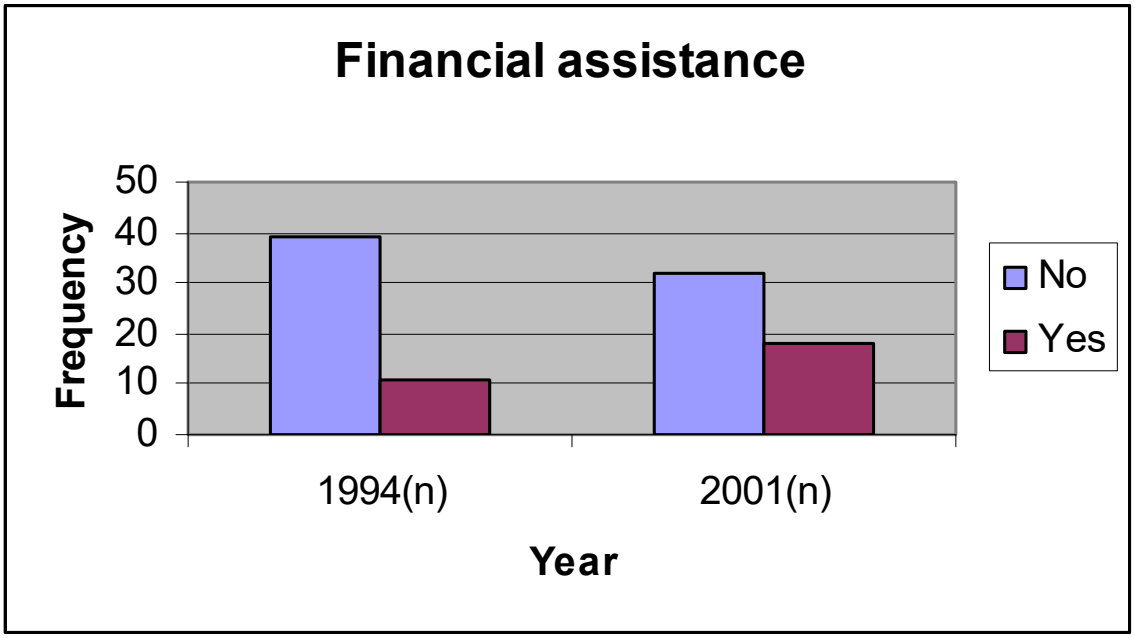


Figure 4.14 Financial assistance for 1994 and 2001 respectively

However, it is apparent that more farmers received financial assistance in 2001 than in 1994.

4.7.3.5 Farmers requiring financial assistance

The majority of the farmers (36% in 1994 and 38% in 2001) required financial assistance in the form of grants (P>0.05). Eighteen percent and 12% in 1994 and 2001 respectively indicated that they required neither a grant nor a loan.

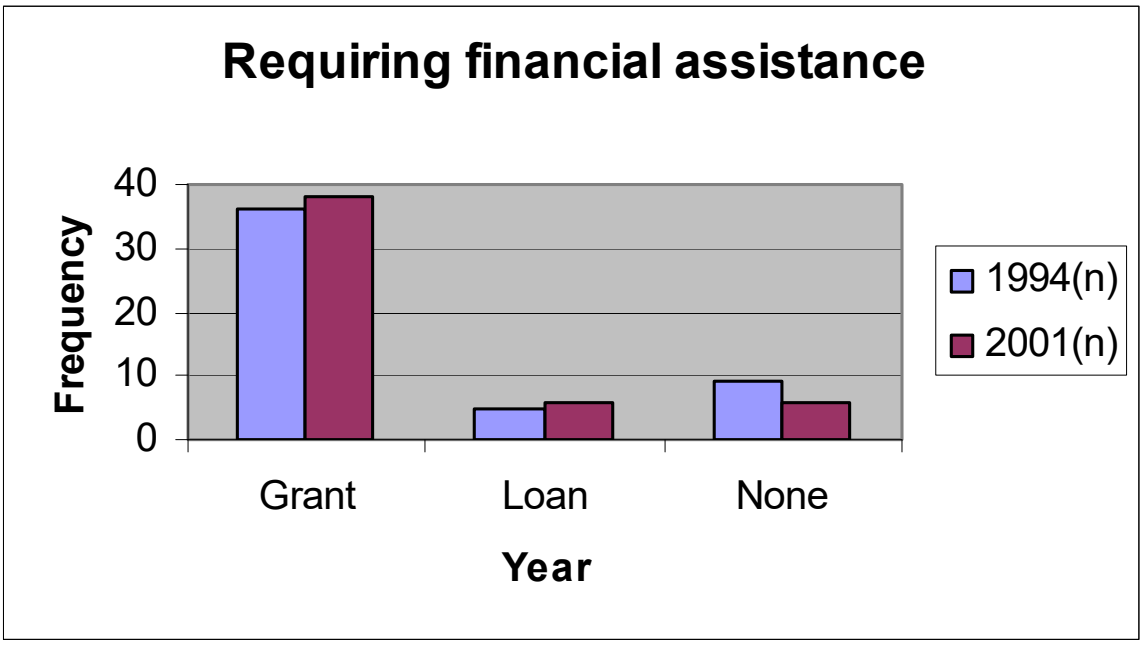


Figure 4.15 Farmers requiring financial assistance for 1994 and 2001 respectively

The findings indicate clearly that small-scale farmers are not a homogeneous group and should be treated accordingly. One respondent said, “I do not want handouts – I want a loan in order to prove my worth.” The 18% and 12% in 1994 and 2001 respectively that said they required neither a grant nor a loan implied that they required only services, and could even afford to pay for them.

4.7.3.6 Motivation for financial assistance

The majority of the farmers (34% and 36% in 1994 and 2001 respectively) were seeking a grant, primarily because they would not have to repay it. Twenty-four percent of farmers in 1994 compared to 26% of farmers in 2001 indicated that they were keen to expand their farming enterprises and would not mind taking a loan if they were unable to secure a grant.

Table 4.25 Motivation for financial assistance for 1994 and 2001 respectively

Options	1994 (n)	Percentage (%)	2001 (n)	Percentage (%)
Things are going well	5	10%	3	6%
Still struggling	6	12%	7	14%
No need to pay back	17	34%	18	36%
Loan has interest	9	18%	8	16%
Desperate to expand my business	12	24%	13	26%
Do not want to farm with borrowed money	1	2%	1	2%
Total	50	100%	50	100%

(n) = Number of respondents

Despite the fact that the majority of the farmers preferred grants, some farmers (10% in 1994 and 6% in 2001) said that things were going well for them and that they therefore required neither a grant nor a loan. Balanced against this, those who indicated that they would not object to taking a loan if a grant was not forthcoming were demonstrating either their deep passion for and commitment to farming – or their desperation. This confirms the prediction by Fenwick and Lyne (1999) that demand for credit is likely to grow as more farmers emerge.

This finding highlights the plight of the respondent small-scale farmers, which could mirror the situation experienced by most small-scale farmers. In general, the state of affairs experienced by these farmers is untenable. It somehow demonstrates their resilience under tiring conditions, which is mostly ignored by many.
All these findings reiterate the hypothesis that the small-scale farmer is not independent or free to act as he would like, as funds (amongst other things) limit his enterprise(s).

4.7.4 Farmers' ability to determine the profitability of their enterprises

In 1994 the majority of the farmers (40%) did not at all determine the profitability of their farming enterprises, and still in 2001 the situation remained almost the same, at 38% ($P>0.05$ – Table 4.26).

Table 4.26 Determining the profitability of enterprises for 1994 and 2001 respectively

Farmers' responses	1994 (n)	Percentage (%)	2001 (n)	Percentage (%)
Not at all	20	46.5%	19	49%
Sometimes	10	23%	10	26%
Fairly often	9	21%	6	15%
Most of the time	4	9.3%	4	10%
Total	43	100%	39	100%

(n) = Number of respondents

This overall rating of their ability to calculate their farm's profitability (38%) is in contrast with farmers' much higher rating of the extent to which they are able to compile various financial statements and budgets (paragraph 4.7.1).

4.8 MARKETING

4.8.1 Crop marketing by farmers

In both 1994 and 2001 the majority of the farmers (74% and 54% respectively) did not adhere to any marketing policy. However, more farmers followed a marketing policy in 2001 than in 1994. The finding is statistically not significant (P>0.05 – Figure 4.16).

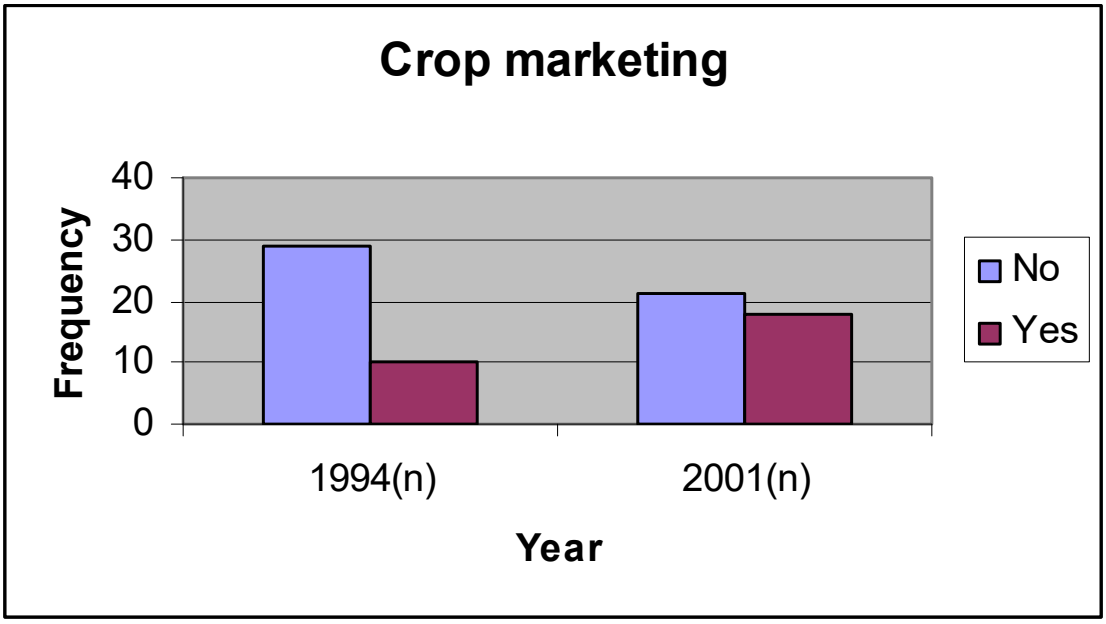


Figure 4.16 Marketing of crop products for 1994 and 2001 respectively

The change might suggest that the farmers are gradually learning from their past experiences, which dictate that for them to achieve their objectives there is a need to have a policy or strategy in place. The findings once again confirm the hypothesis that transformation in production technology and productivity, necessary for small-scale growth, will take place given time and the right incentives. On the contrary, however, the findings might just as likely suggest that the respondents had no information available on marketing skills and the channels and services available to empower them, as suggested by Olivier and Masiteng (2003).

4.8.2 Market projections by farmers

Figure 4.17 shows the farmers' responses with regard to the projecting of the market situation in 1994 and 2001. There was a significant ($P<0.05$) change in the farmers' responses regarding market projection (20% vs. 40% in 1994 and 2001 respectively).

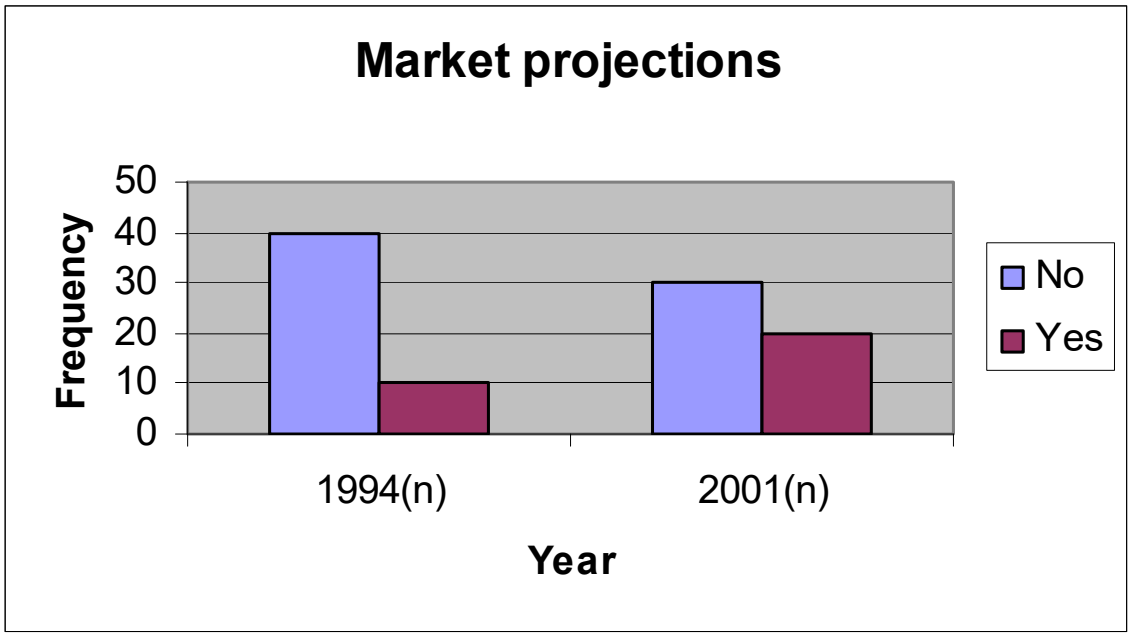


Figure 4.17 Market projections by farmers for 1994 and 2001 respectively

4.8.3 Marketing contracts

In 1994 and in 2001 the majority of the farmers (86% and 84% respectively) did not have marketing contracts in place. The two-percent change in the response of farmers observed during the elapsed period was not significant (P>0.05).

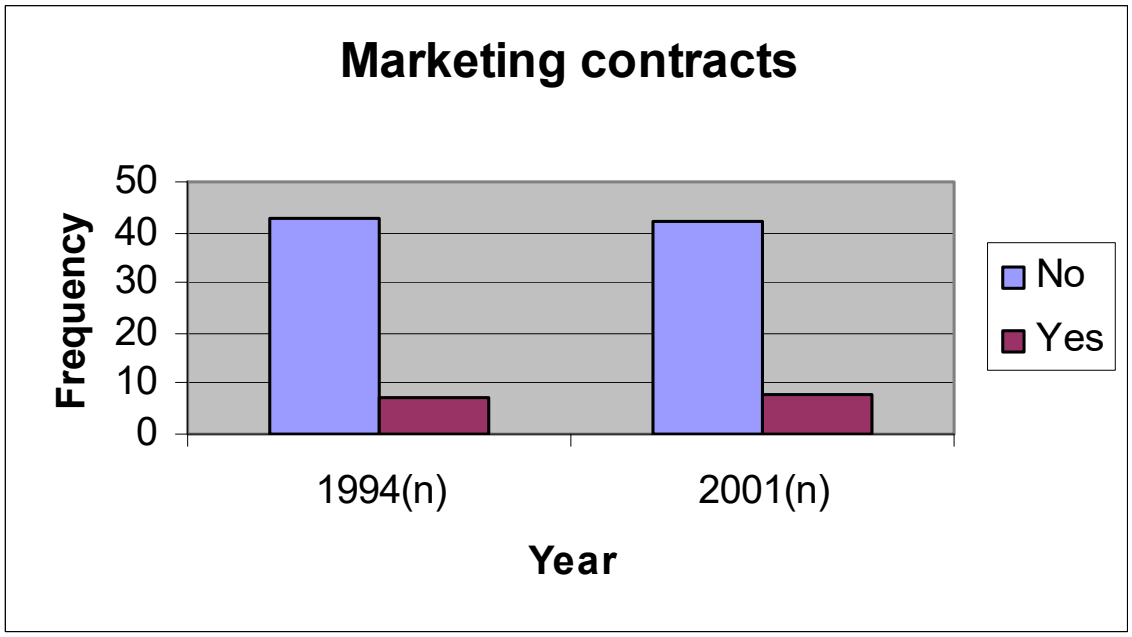


Figure 4.18 Marketing contracts of farmers for 1994 and 2001 respectively

This situation can be attributed to many factors (Figure 4.18). Findings by Chikanda and Kirsten (1998), Mukhala and Groenewald (1998), Poulton *et al.* (1999), Walker (1999) and Jordaan (2003) show that a lack of market information together with weak marketing contracts and a lack of production finance with the resultant low or unpredictable yields and inability to bear risk, as well as quality requirements of the market and so forth, contribute to the lack of marketing contracts among small-scale farmers. Again, in cases where farmers had good-quality produce, they were still constrained due to unstable markets and prices, as well as lack of a means to transport their produce (Walker, 1999; Masiteng, 2000; Phadime & Makhura, 2000).

4.9 COLLABORATION WITH COMMERCIAL FARMERS

As shown in Figure 4.19, small-scale farmers' collaboration with their commercial counterparts increased significantly ($P<0.01$) from 30% in 1994 to 76% in 2001.

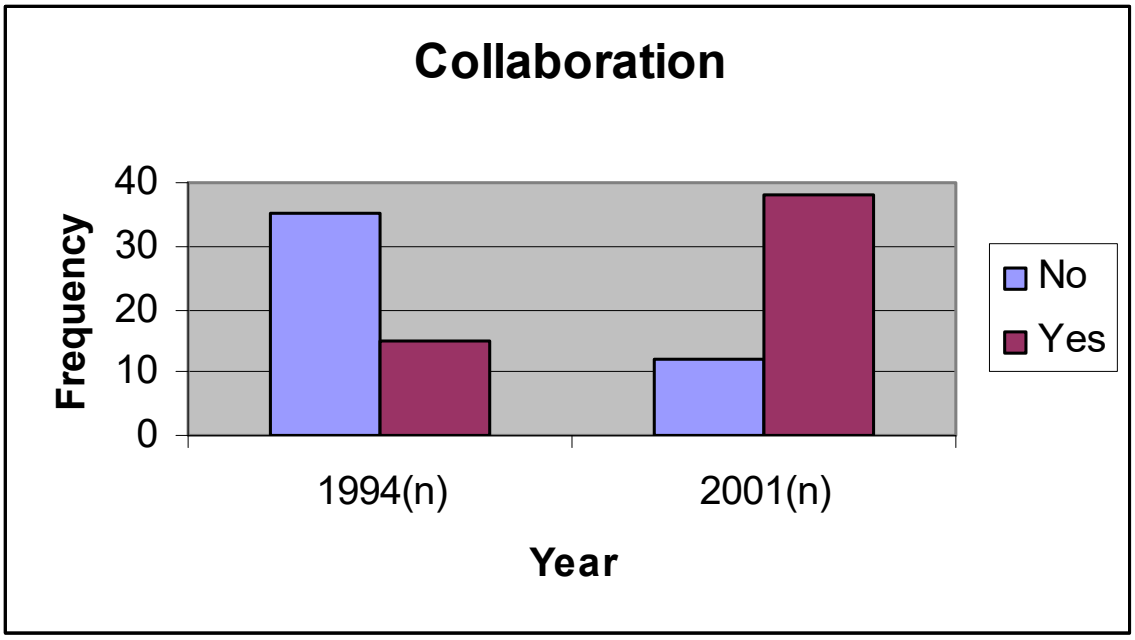


Figure 4.19 Collaboration with commercial farmers in 1994 and 2001 respectively

Based on this result, we can assume that since both small-scale and commercial farmers are faced with more or less the same conditions with regard to farming matters, they might have realised that they could somehow all benefit from collaboration. Again, small-scale as well as commercial farmers could find it imperative to co-operate on things like combating theft and veld fires, etc., since such issues affect them indiscriminately.

It is also possible that this collaboration could have been the outcome of the provincial Department of Agriculture's mentorship programme, alternatively known as the "know your neighbour" campaign, whereby neighbouring commercial farmers are co-opted to mentor small-scale farmers. It also confirms the assertion by Jordaan (2003) that commercial agricultural farmers have already pledged their support as mentors of small-scale farmers.

4.10 EXTERNAL AND INTERNAL MANAGEMENT ENVIRONMENT FACTORS THAT NEGATIVELY AFFECTED FARMERS

In 1994 the majority of the respondents (58%) were negatively affected by technological factors, while in 2001 the majority (30%) were negatively affected by economic factors (Table 4.27).

Table 4.27 Impact of management environment factors for 1994 and 2001 respectively

Factors	1994 (n)	Percentage (%)	2001 (n)	Percentage (%)
Physical	9	21%	11	25%
Economic	6	14%	13	29.5%
Social	7	16%	4	9.1%
Internal	5	12%	2	4.54%
Political	1	2%	1	2.27%
Trade	0	0%	2	4.5%
Technological	15	35&	11	25%
Total	43	100%	44	100%

(n) = Number of respondents

This finding supports the hypothesis that the small-scale farmer is not independent or free to act as he sees fit, since risk, tenure systems, labour, technology, funds and so forth limit his enterprise(s). This is also supported by the findings reported in point 4.3.6.

CHAPTER 5

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 SUMMARY

During this study it was discovered that small-scale farmers in the Free State were comprised of a mixture of relatively young, middle-aged and elderly people with a fair distribution of farming experience. Their educational qualifications varied considerably, ranging from no schooling to a post-matric qualification. It was found that with regard to annual planning, educational qualification had no significant impact. However, it came to light that farmers with a higher level of education were more likely to draw up annual plans than those farmers with a lower level of education.

In terms of the external management environment, the main factors that had a significant impact on the respondents in 1994 were technological environment (35%), physical environment (21%), social environment (16%) and economic environment (14%), while in 2001 the main factors were economic factors (30%) and physical and technological factors (both accounting for 25%).

The technological environment manifested itself in the form of lack of and/or poor quality of machinery and implements, as well as physical impediments in the form of drought, veld fires and theft, together with high interest rates and collateral.

In both 1994 and 2001 the majority of the farmers (56% and 44% respectively) had to sell their animals so as to be able to continue with their farming activities. The farmers could do absolutely nothing about the above-mentioned factors, which were largely out of their control.

In terms of the internal management environment, significant changes occurred in the area of financial management. According to the responses of participant farmers, the number of farmers keeping farm balance sheets increased significantly ($P<0.05$) from 30% in 1994 to 54% in 2001. Likewise, the number of farmers who drew up farm income statements rose from 32% in 1994 to 46% in 2001 ($P<0.01$). With respect to the

preparation of farm cash-flow statements, the number of farmers doing so increased significantly ($P<0.05$) from 46 % in 1994 to 54% in 2001.

Another significant ($P<0.05$) change occurred with regard to market projections by farmers prior to production. Compared to 1994 (20%) the majority of farmers performed market projections in 2001 (40%).

It was found that the changes in other internal management environment factors such as land, capital and personnel management were insignificant.

5.2 CONCLUSION

In general, the performance index of the farmers improved between 1994 and 2001. This could be attributed to, amongst other things, the use of experts in the case of financial matters. In areas where there was no significant change it was apparent that the farmers experienced problems securing capital for the purchasing of production inputs, for example for controlling pests, or immunising and/or feeding animals according to their production stage. It could therefore be assumed that the respondents did not have sufficient funds to purchase those inputs.

The findings with regard to the external environmental confirm the hypothesis that small-scale farmers are not independent or free to act as they see fit, since risk, tenure systems, labour, technology, funds and so forth limit their enterprises.

The findings with regard to financial management and market projections confirm the hypothesis that small-scale farmers are rapidly entering the market economy and are highly responsive to change.

Again, the findings with regard to tractor and implement ownership among the respondents confirm the hypothesis that the transformation in production technology and productivity necessary to achieve high small-scale agricultural growth will take place, given time and the right incentives.

However, the same cannot be said of the hypothesis that small-scale farmers are badly served by extension services with an ineffective transfer of technology. The findings show that extension officers assisted a large number of the respondents. But on the

other hand, a substantial number of farmers received no assistance whatsoever from extension officers. This hypothesis can therefore be regarded as a moot point.

5.3 RECOMMENDATIONS

With regard to the respondents' production-related practices in livestock as well as crop enterprises, the following actions are recommended:

1. The Department of Agriculture (provincial) should assist small-scale farmers in terms of establishing the viability of their enterprises with a view to enabling the farmers to make informed decisions. The viability study should include the production history of their farms, as well as detailed farm maps and soil samples.

2. This same department, in collaboration with the private sector, should find ways of establishing production insurance at affordable prices for these farmers so as to mitigate the effects of external factors such as physical impediments.

3. Prior to the implementation of the above, the farmers should be assisted in terms of access to credit for production purposes, the provision of regular market information, access to markets, and/or the signing of marketing contracts. Where necessary, the state should play a facilitative and training role in this process.

   The performance of the majority of the respondents in respect of financial control should serve as a motivation in this regard. It is a clear indication that, given support, the farmers can perform well.

4. The Department of Agriculture, together with the private service providers, should compile a database of all farmers, detailing their biographic information and type(s) of enterprise(s) in which they are involved, as well as their training and/or other needs. This would enable service providers to design or structure their products or services to suit these farmers.

With regard to livestock farmers, the following actions are recommended:

5. With regard to the immunisation of animals, where it has been established that certain herbs are effective in controlling certain diseases, such herbs should be given preference over conventional medicines since they are cheaper and easier to administer.

6. A study should be conducted to establish the reasons why some farmers are not feeding their animals according to their production stages, as well as the possible intervention mechanisms that can be implemented.

7. The majority of the respondents (70% and 64% in 1994 and 2001 respectively) indicated that there was nobody to advise them on labour matters. It is thus recommended that the farmers' associations take the initiative to bring the Department of Labour on board in respect of this matter and to use that opportunity to raise their concerns regarding the Labour Law Act.

8. In light of the fact that the majority of the farmers (38%) said they "always" used family members in their labour force in 2001, as opposed to 40% who said they "did not use them at all" in 1994, it is recommended that a study be conducted to determine the reasons for or causes of this disparity, since this finding contrasts with the findings of other authors.

5.4 IMPLICATIONS FOR FUTURE RESEARCH

Since change is inevitable, more so in the farming industry, there would be a need for a similar study in the future. Again, since change does not affect only the farmers but the farming fraternity as whole and even related industries, it would thus be imperative that other role players are factored in such a study. That would go a long way in terms of bringing about common understanding between and/ or among different role players regarding problems that they might be grappling with.

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QUESTIONNAIRE ON THE CHANGES THAT HAVE TAKEN PLACE IN THE MANAGEMENT ENVIRONMENT OF SMALL - SCALE FARMERS FROM 1994 TO 2000

OBJECTIVES OF THE QUESTIONNAIRE

- To identify factors which have changed since 1994, and to determine the extent of their relative significance.

- To determine the changes in the nature and level of management processes of farmers since 1994 in order to determine whether any significant change has taken place.

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SCHOOL OF AGRICULTURE AND ENVIRONMENTAL SCIENCES
TECHNIKON FREE STATE
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A. BIOGRAPHIC INFORMATION

A.1 DISTRICT …….. [1]

A.2 PROVINCE …….. [2]

A.3 AGE ……..…….. Years [3]

A.4 FARMING EXPERIENCE ……. Years [4]

A.5 HIGHEST ACADEMIC QUALIFICATION …….. [5]

B. PLANNING FOR THE FUTURE

(Answer YES or NO to every statement)

FORMULATION OF OBJECTIVE

		Yes	No	
B.1	A written annual planning, clearly describing the objectives, can be submitted			[6]

Listen to the farmer, evaluate his reply and mark the appropriate space with a cross on a scale of 1 to 5, where 1 = poorly defined and 5 is comprehensive or complete

		Choose one					
	Farmer's	1	2	3	4	5	
B.2	General aim (mission)						[7]
B.3	Long-term objectives (longer than 10 years						[8]
B.4	Medium-term objectives (2 to 5 years)						[9]
B.5	Short-term objectives (less than 1yr)						[10]

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NB. In sections C, D, and E the answers for 1994 and for 2000 must be given respectively

C. FINANCIAL MANAGEMENT

1 ENTERPRISE AND BUDGETS

(Write 1994 and 2000 respectively in the appropriate column of each row)

(a) What means of financial control system do you employ?
…… 11

(Mark with an X on the appropriate space)

(b) Do you know how to draw an enterprise budget? **Yes/No** 12

(c) Do you know how to draw a balance sheet? **Yes/No** 13

(d) Do you know how to do a cash-flow budget? **Yes/No** 14

		Not at all	Sometimes	Fairly often but sometimes incomplete	Most of the time but incomplete	Always and complete	
C.1	Do you draw up a branch budget for every crop and type of livestock?						15
C.2	Is a complete cash-flow budget drawn up?						16
C.3	Do you do a complete farm planning and how do you decide on what type of crop/livestock to farm with?						17

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2 FINANCIAL STATEMENTS

(Write 1994 and 2000 respectively in the appropriate column of each row)

		Not at all	Sometimes	Fairly often but sometimes incomplete	Most of the time but incomplete	Always and complete	
C.4	Do you draw up a balance sheet at the end of financial year?						18
C.5	Do you draw up a budgeted balance sheet at the beginning of the financial year?						19
C.6	Do you draw up an income statement for bussiness						20
C.7	Do you draw up your cash flow statement annually						21

3 CRITERIA

(Write 1994 and 2000 respectively in the appropriate column of each row)

	Balance sheet and efficiency analysis	Not at all	Sometimes	Fairly often	Most of the time	Always and complete	
C.8	Do you do calculation of the farming business's solvency criteria?						22
C.9	Do you calculate your farming business's liquidity ratio?						23
C.10	Do you calculate your farming business's net worth						24
C.11	Do you calculate efficiency criteria for your livestock and crop branches?						25

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D. PRODUCTION MANAGEMENT

D.1 What is the appropriate percentage contribution of each of the branches of your farming business?

Branch (ha) 1994:	Percentage contribution	
……..	……..	26
……..	……..	27
……..	……..	28
……..	……..	29
……..	……..	30
……..	……..	31
……..	……..	32

Branch (ha) 2000	Percentage contribution	
……..	……..	33
……..	……..	34
……..	……..	35
……..	……..	36
……..	……..	37
……..	……..	39
……..	……..	40

	(a) LIVESTOCK BRANCHES	Not at all	Sometimes	Fairly often	Most of the time	Always and complete	For office use only
		1	2	3	4	5	
D.2	Do you know the definition of and use the criterion of the LSU to determine carrying capacity?						41
D.3	Are the rams/bulls tested for fertility before mating season?						42
D.4	Do you have a specific mating season on your farm?						43
D.5	Do you know the calving/ lambing/weaning percentage of your farming business?						44
D.6	Are the animals that did not calve/lamb identified?						45
D.7	Is strategic feeding given according to stage of production?						46
D.8	Do you know the ingredients of fodder/licks?						47
D.9	Do you follow a detaied immunization/dosage programme?						48
D.10	Do you know how to do veld assessment and to what extent do you use your knowledge of indicator to assess the veld condition?						49
D.11	Do you apply rotational grazing?						50
D.12	Do you annually do fodder-flow planning?						51
D.13	Do you make a provision for fodder bank (roughage)?						52
D.14	Are the gross margins of the livestock branch known?						53

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D.15	What is the carrying capacity of your veld? **LSU/Ha**	54

(b)	CROP BRANCH	Not at all	Sometimes	Fairly	Most of the time	Always / complete	
		1	2	3	4	5	
D.16	To what extent do you calculate the gross margin of all your crop branches?						55
D.17	Do you distinguish between potential classes of cultivated pieces of land/fields on your farm?						56
D.18	By whom and how is your soil analysis done?						57
D.19	Do you believe in the recommendations made and are you able to interpret it?						58
D.20	How often do you have mechanisation plannimng done?						59
D.21	What research results do you take into account during the production programme?						60
D.22	Do you know about the main weeds in your area and what procedures do you follow to control those weeds?						61
D.23	Do you do calculations regarding the fuel consumption of activities like ploughing to control weeds?						62

E. ORGANISATION AND CONTROL OF LABOUR

(Write 1994 and 2000 respectively in the appropriate column of each row)

	MANAGEMENT OF LABOUR	Not at all	Sometimes	Fairly	Most of the time	Always / complete	For office use only
		1	2	3	4	5	
E.1	Do you follow any written rules of behavior/conduct?						63
E.2	Do you give any informal training to your workers?						64
E.3	Do workers receive formal skills training?						65
E.4	Do the workers have a say in the training they have to undergo?						66
E.5	How do you know that your workers' pay is fair for the area where you live?						67
E.6	Are your workers paid unequal salaries?						68
E.7	How do you make provision for pension, medical aid, funeral cost, school fees etc?						69
E.8	Did you conclude service contracts with your workers?						70
E.9	Are these written service contracts?						71
E.10	Describe the community development programme you implement?						72

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	MANAGEMENT OF LABOUR	Not at all	Sometimes	Fairly	Most of the time	Always / complete	
		1	2	3	4	5	
E.11	Do you plain jointly with with your workers on activities that have to be performed daily?						73
E.12	Do you have an existing workers committee that functions actively?						74
E.13	What labour legislation is presently applicable to you and how do you make provision for it?						75

F. RISK MANAGEMENT AND ADAPTABILTY

F.1 Can you name a few steps or measures you as a farmer are taking to reduce risk on your farm?

..... 76

..... 77

..... 78

..... 79

..... 80

..... 81

..... 82

..... 83

..... 84

..... 85

..... 86

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G. USE OF COMPUTER

G.1 Are you using computer on your farming at this stage?

Yes **No** 87

G.2 When did you acquired the computer? 88

G.3 What computer programme(s) are you using for your farming system and why did you choose this specific programme(s)?

Programme(s)

..... 89

..... 90

..... 91

..... 92

..... 93

..... 94

..... 95

Reason(s)/motivation

..... 96

..... 97

..... 98

..... 99

..... 100

..... 101

..... 102

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G.5 Hiw high would you rate yourself in terms of skill and knowledge in using the computer in your farming situation? (Scale of 0 - 10)

.....

.....

103

104

G.6 How important do you as farmer regard the use of computer in the present day farming environment? Do you think that using a computer for planning and analysis of your farming system made it easier or just more complicated?

.....

.....

.....

.....

.....

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105

106

107

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H. MARKETING

(Answer Yes or No to the following questions and give a brief motivation for your answers)

H.1 Do you follow a set policy for marketing crop and livestock products?

Crops:

..... 111

..... 112

..... 113

..... 114

Livestock:

..... 115

..... 116

..... 117

..... 118

..... 119

H.2 Do you use projections for the marketing of your products?

..... 120

..... 121

..... 122

..... 123

..... 124

H.3 Do you conclude prior to contracts with the markets such as market of co-operation?

..... 125

..... 126

..... 127

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H.4 Where do you get most of the information you use to do projections for marketing?

..... 128

..... 129

..... 130

..... 131

..... 132

I. MAINTENANCE

I.1 Can you describe briefly how and when do you attend to maintenance tasks on your farm, such as the maintenance of fencing and windmills, care of implements, maintenance of sheds, houses, roads, etc?

..... 133

..... 134

..... 135

..... 136

..... 137

I.2 Do you follow a set maintenance plan regarding your decision about maintenance and servicing, i.e which decisions are given priority?

Yes **No**

..... 138

..... 139

..... 140

..... 141

..... 142

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J. IMPACT ON THE ENVIRONMENT

J.1 Which 8 environmental factors presently have the most influence on farming practices?

1) 143

2) 144

3) 145

4) 146

5) 147

6) 148

7) 149

8) 150

J.2 Which 2 of the above do you regard as having the greatest influence at present?

1) 151

..... 152

2) 153

..... 154

J.3 Which of the above factors had the greatest influence on your farming in 1994?

1) 155

..... 156

2) 157

..... 158

For office use only

K. PRACTICES

K.1 It can be assumed that your present practices differ considerably from those followed in 1994. Please name 4 practices that presently differ from those used in 1994, (i.e the actions/practices that are done most differently from 1994)?

1) 159

..... 160

2) 161

..... 162

3) 163

4) 164

..... 165

5) 166

..... 167

L. TRAINING

L.1 What do you regard as the most important skills needed by future Small Scale Farmers?

1) 168

..... 169

2) 170

..... 171

3) 172

4) 173

..... 174

5) 175

..... 176

THANK YOU FOR BEING WILLING TO SUPPLY THE INFORMATION AND ALSO FOR YOUR TIME.

NB.: **Student fills in the next part after the visit!**

MAINTENANCE AND ADMINISTRATION

(Mark the correct statement with a cross)

	Mark with X	For office use only
A separate, neat, well organised office with a well planned and functional filling system.		177
An administrative corner in or other room which appears well planned and functional system.		178
A separate room which appears neat (without computer with a seemingly organised filling system). However, the candidate has difficulty locating documents (needed during evaluation).		179
A separate room which appears untidy and chaotic serves as an office. The filling system is haphazard and incomplete.		180
A separate administrative corner in a room which appears untidy and chaotic. The filling system is haphazard and incomplete.		181
No administrative centre or system whatsoever.		182

(Note/observe the condition of tractors, vehicles, fences, roads, windmills, feeding troughs, labourer's houses, etc, and mark each correct statement with a cross)

	Mark with X	
The farmer has an organized, systematic maintenance plan and all the activities are performed according to plan.		183
The farmer has no system, but he do maintenance as needed.		184
No maintenance is done.		185

Name of student/interviewer:……. 186

Student number: …… 187

Tel no.: (……)……..…….. 188

Code list
Central University of Technology, Free State

A	BIOGRAPHIC INFORMATION	Codes	Blocks:
A.1	**District**		
	Harrismith	1	
	Bethlehem	2	
	Mount Fletcher	3	
	Tsoho	4	
	Colesberg	5	
	Bloemfontein	6	
	Zastron	7	
	Sannaspos	8	
	Brandfort	9	
	Delareyville	10	
	Mooi dorpie	11	
	Kestel	12	
	Marquard	13	
	Maluti-A-Phofung	14	
	Ficksburg	15	
	Senekal	16	
	Thaba'Nchu	17	
	DeWetsdorp	18	
	Bultfontein	19	
	Lady Grey	20	
	Odendaalsrus	21	
	Henneman	22	
	Motheo	23	
	Botshabelo	24	
	Thabo Mofutsanyana	25	
A.2	**Province**		
	Free State	1	
	Eastern Cape	2	
	Eastern Free State	3	
	North West	4	
	Northern Cape	5	
A. 3	**Supplied in questionnaire**		
A. 4	**Supplied in questionnaire**		
A.5	**Highest Academic Qualification**		
	None	0	
	Grade 1 - 7	1	
	Grade 8 - 10	2	
	Grade 11 & 12	3	
	Tersiêr: M + 1jr. (Diploma/1jr.)	4	
	3jr.Agriculture Diploma/Grade	5	
	No - 3jr Agriculture Diploma/Grade	6	
	Doktor	7	
B	PLANNING FOR THE FUTURE		
B.1	No	0	
	Yes	1	
.2 - B.	**Farmer's (Choose one)**	**(1; 2; 3; 4; 5)**	
	General aim (mission)		
	Long-term objectives (longer than 10 years)		
	Medium-term objectives (2 to 5 years)		
	Short-term objectives (less than 1 yr)		

C	**LAND**			
C. 1	**Supplied in questionnaire**			
C. 2	**Supplied in questionnaire**			
C. 3	**How did you acquire your farm?**			
	Inherited from father / grandfather / father-in-law	1		
	Land Bank / form of a loan / Land affairs	2		
	Rent from retired Father	3		
	Bought it through bank loan	4		
	Own farm	5		
	Bought / Legally + owned	6		
	Rent / Leased	7		
	Through land Reform programme / Government / Agriqwa	8		
C. 4	**If rented how much do you pay per ha/annum?**			
	Not	0		
	Sharing	1		
C. 5	Sell animals, etc., farm production	1		
	Annualy, 50% , 25%	2		
	Pay yearly	3		
	Loan / Land Bank	4		
	Self employment / Pension	5		
	Financial assistance	6		
C. 6	No	3	21	**(1994)**
	Yes	2	22	**(2001)**
C. 7				
	Tractor + implement repair	1		**1994**
	Sell bales	2		23; 24;
	Cabbage; Vegetables; Fruit	3		**2001**
	Crops + Livestock (Pigs, chicken, cattle, etc.)	4		26; 27
	Postonal Pearing	5		
	Wheat, maize, diary, small stock	6		
	Mutton (sheep); Wool	7		
	WHY?			**1994**
	To make money / Profit, Income	1		25
	Increased number of bales made	2		**2001**
	Market demand; / Increase farm income	3		28
	Best returns; / Job creation; / Diversify; / Self use(own); / Suitable for condition	4		
	Implement + Diesel expensive	5		
	Because of land + area	6		
	What I found on the farm / Less risks	7		
	Can be opperated with the minimum inputs; / easy adapt;	8		
	Easily established; / simple to manage; / knowledge	9		
	Want bigger responsibility; / Reasonable profit	10		
	Sipply to factories; / So that they can produce	11		
	Contract obligations	12		
	Less expensive	13		
	Inherited	14		
	Have no funds for infrastructure	15		
	Had no implements	16		

D	**CROPS**		**1994**
D.1 - D.	Not at all	0	31; 33; 35; 37;
	Sometimes	1	
	Fairly often, but sometimes incomplete	2	**2001**
	Most of the time but incomplete	3	32; 34; 36; 38
	Always and complete	4	
D. a	Check what shorts most/needs	1	
	From soil	2	
	Season changes; / Climate; / Rainfall; / Season	3	
	Traditional + every season, / according to season	4	
	Rotational system + different crops, at different times; / Market; / Price;	5	
	Short Growing	6	
	Don't know	7	
	Other- (info from neighbours;/farmers)	8	
	On demand	9	
D. b	Technical advicers;/ Local advice; / Ext. offficer; / OTK	1	
	No one	2	
	Farmer; / Family; / Other; / Myself	3	
	Agri- Elco/Qwa; / Dep. Of Agriculture; / Government	4	
	Weather forecasts; / T.V.	5	
	Co operative	6	
E	**LIVESTOCK BRANCH(es)**		
E. 1 - 6	Not at all	0	
	Sometimes	1	
	Fairly often but sometimes incomplete	2	
	Most of the time, but incomplete	3	
	Always and complete	4	
	(Other is E.1 - E.5)		43 - 52
	(Other one is E. 6)		53 + 54
E. a	Diary; / Fries; / Jersey	1	55 + 57
	Cross Breeds; / Beef(cattle); Cows	2	
	Bonsmara; / Brahaman ; / Simmentaler; / Afrikaner;/ Hereford; / Nguni	3	
	Sheep;/ Dorper;/ Merino;/ Pigs; / Goats;/ Poultry/Chicken; / Horses	4	
	WHY?		56 + 58
	Improving beef production	1	
	Adapted to the land /area allow it	2	
	Milk + Meat (Beef); / Wool produce; / produce to factories	3	
	Less financial; / Less training; / It`s easy	4	
	For own use; / get income; / Good income;/ Profit	5	
	Good market; / Demand / Auctions	6	
	What they have at the moment; / Bought what they find/get; / Don't have a choice	7	
	Inherited	8	
	Bought it	9	
b.	No (no one)	1	59 + 61
	Yes (use A1)	2	
	Yes (use Bull) (Boar)(Ram)	3	
	Yes (use both)	4	
	MOTIVATE:		60 + 62
	Have experience; / No knowledge required;/ Old fashion;/ Easy	1	
	Did not know about AI;/ Need training etc. / Do not know about bulls;	2	
	Considering to use AI	3	
	Easy to get + manage;/ More cost effective; / Financial status	4	
	AI to expensive;/ Bulls to expensive; / AI no assistance	5	
	Extensive / Farming System	6	
	Less expensive; / not expensive;/ intensive	7	
	Not the farmers Decision	8	
	For own use only	9	
	AI is quicker; / easy to do	10	
	Have no more bull	11	
	Put female on heat; / Easy making	12	
c	Vertarian; Farmer, Neighbour; Family; Friend; Foreman; Properboer	1	**1994**
	Farmer's Weekly; TV ; Workshops	2	63 + 64
	Nerpo + Benchmark; Dep. Of Agriculture / Agri qwa, Agri-eco	3	**2001**
	No one	4	65 + 66
	Co operative	5	
	Technical advicers; / Ext. officers; / Financial advicers; / Annimal Hospital; / Government officials	6	

F	**PRODUCTION MANAGEMENT**		
F. 1	Cattle; / Beef; / Livestock		67
	Sheep; / Chicken		68
	Pumpkin; / Vegetables; / Beans		69
	Goats		70
	Diary + milk; / Pigs		71
	Crops; / Sorghum; / Peas; / Wheat; / Soha;/ Fruits		72
	Maize; / Sunflower		73
F. 2	Cattle; / Beef; / Livestock		74
	Sheep + Wool; / Spinash; / Fish; / Chicken		75
	Pumpkins; / Vegetables;/ Carrots; / Bean		76
	Goats; / Wheat		77
	Diary + Milk; / Beetroot; / Pigs		78
	Crops; / Sorghum; / Soha;/ Fruits		79
	Maize; / Sunflower		80
G.	**MECHANISATION AND MAINTENANCE**		
G. a	No	0	
	Yes	1	
	a - do you have a tractor?		81 + 82
	b - do you own basic implements e.g plough, planter, etc.? /		83 + 84
	Which implements do you have?		83 + 84
	c - how do you make provision for replacement of your machinery when they have completed their lifespan?		85 + 86
	d - do you follow a set maintenance and servicing plan for your capital items?		87 + 88
b.	No	0	
	Yes	1	
	Mouldboard; Plough; Wheat; Planter; Ripper. Scoffel; Hammer Mill; Press	2	83 + 84
c	No	0	
	Yes	1	
	Repair; / Fix selve	4	85 + 86
	Buy	5	
	Sell	6	
	No replacements	7	
	Fund from Dep. Of Social Welfare	8	
d.	No	0	87 + 88
	Yes	1	
e.	Not at all	0	89 + 90
	Sometimes	1	
	Fairly often but incomplete	2	
	Most of the time	3	
	Always	4	
H	**LABOUR MANAGEMENT**		
H.a	**Supply in questionnaire**		
b.	**Supply in questionnaire**		
c.	No	0	
	Yes	1	
d.	No one	0	
	According to needs + rules	1	
	Ext. officer; / Labour Dep.; / Workshops; / Land affairs;/ Agri - elo; / Home affairs; / Bookkeeper	2	
	Family; / Myself; / Associates; / "Boerevereniging";	3	
e.	Financial potition; / depends on what they can afford; / Profit makes; / and improvement	1	
	According to workers ability; / knowledge; / type of work; / Performance; / Dedication	2	
	Neighbours; / Wages in area;/ Standard wage	3	
	Time of appointment; / Agreement;/ Time by days/ Time by months; / Negotiate	4	

H. 1 - 6	Not at all	0	**I.1** 101 + 102
	Sometimes	1	**I. 2** 103 + 104
	Fairly often but incomplete	2	**H.3** 105 + 106
	Most of the time	3	**H.4** 107 + 235
	Always	4	**H.5** 108 + 109
			H.6 110 + 111
H. 7	**Which section of the legislation do you wish to be exempted from and why?**		
	None	0	
	Don't know	1	
	Own instruction; / Own thing	2	
	Basic wage	3	
	Registering employees; / Employment(ing)	4	
	Time frame	5	
	Taxes	6	
	Government Legislation	7	
	Security	8	
I	**FINANCIAL MANAGEMENT**		
I.1 a - d	No	0	
	Yes	1	
	a - Balance Sheet		114 + 115
	b - Income Statement		116 + 117
	c - Enterprise Budget		118 + 119
	d - Cash-flow		120 + 121
d. / e.	No one	0	
	Himself; Myself	1	122 + 123
	His Father; / Family; / Farmer; / Properboer; /	2	
	Accountant; Bookkeeper; Ext. officer; Auditor; Fin. Advicer, Dep. Of Welfare.	3	
I. 2			
a.	None	0	
	Bank; / Land Bank	1	
	Own Capital; Selling animals	2	
	CPF -SP; Sentra Oes; Co operative; Government, Dep. Of Agriculture	3	
	Family	4	
b.	None	0	
	No additional funding for advancement; / never borrowed money	1	
	Guarantees; Repayment capacity	2	
	Collateral; / Need experience; / Need knowledge of farming	3	
	Liquidity rates to low; / Repayment	4	
	House as security; Security; Proof of land ownership	5	
	Interest rates; / Pensionfund; / Rent increase	6	
	Value of assets	7	
	Lack of security	8	
c.	None	0	
	No additional funding; / Lack of Finance	1	
	Guarantees	2	
	Collateral	3	
	Repayment capacity	4	
	House as security / Lack of Security	5	
	Interest / Rent	6	
d.	No	0	
	Yes	1	
e.	Grant (yes)	1	
	Loan (yes)	2	
	Both (yes)	3	
	No (none of them)	4	
	MOTIVATE:		
	Was his father's farm; / Father operates farm	1	
	Things are going well; / to establish himself; / Own Money	2	
	Struggeling; / No money; / Less income	3	
	Would not be able to pay back; / Don't have to pay back	4	
	Loan have more interests; / Can't afford a loan, / To expensive	5	
	To kickstart other Projections; / Expand business	6	
	So they could work hard; / Want to be progressive	7	
	Do not want to farm with borrowed money	8	
	Diversify ; / Farming requires capital outlay	9	
	For good cash flow	10	

I.3		
a	Don't know / none / don't want	0
	Buy only what you need	1
	Work on enterprise budget; / Depends on cash-flow and Budgeting; / Balance sheet	2
	Re- investment; / investment	3
	Keep records, for future use; / Bookkeeping	4
	Limited overdraft facilities	5
	Traiding; / Sell Livestock	6
	Hired a bookkeeper; / Auditor	7
	Properboer	8
	Sell livestock	9
b	None	0
	When I'm unable to expand my business	1
	Unable to determine profitability; / unable to claim tax	2
	Isn't accurate	3
	Lack of planning	4
	No build up for cash for future use	5
	Determination of income; / tax	6
	No receipts to prove expenditure; / Paperwork	7
	Properboer	8
	Unable to have cash disposal	9
	Meeting with colleques; / Co - workers	10
	Cannot predict the future	11
c	None	0
	Himself / Myself	1
	Accountant; / Bookkeeper; / Dep. Of Welfare; / Ext. officer ; / Financial advicer; / Agri - elo	2
	Family; / Farmer; / Proper boer	3
d	Nothing	0
	Everything / All	1
	Done things the way co-operation do it	2
	Farming not up to standard	3
	Vision for the future	4
	Cash - flow control; / extensive farming; / fin. Income state; / Calculation; Budgeting / Balance sheet	5
	Immunization programme	6
	Computers	7
	How to calculate profit	8
	Keep Records; / Balance	9
e	None	0
	Everything	1
	Marketing; / ACC	2
	Not to rely on Profit; / Budgeting planning	3
	Operating costs; / Well equiped; / New equiped	4
	Computer	5
	Calculation of income; / tax; / cost	6
	Reasonable wage	7
	Livestock; / Crops	8
f	Not able	0
	Checks his inputs; / incomes;/ cash-flow; / enterprise budget; / Statement; / Accounts	1
	Estimation	2
	The financial advisor; / bookkeeper; / Auditor; / Properboer	3
	Look at weather; / Climate conditions	4
	Livestock increase / decrease	5
	Records	6
g + h	Not at all	1
	Sometimes	2
	Fairly	3
	Most of the time	4
	Always / complete	5

J	**RISK MANAGEMENT AND ADAPTABILTY**		152 - 162
J. 1	Works only with cash	1	
	Buy only needed things, / Consider only importance	2	
	Pest control, / Fire - belts; / Prevent fire	3	
	Bought planter, implements, certified Seeds, Fodder Storage(planning)	4	
	Immunization	5	
	Combat theft	6	
	Practise rotational graseing	7	
	Flood Control; Rain; Save water	8	
	Diversitification	9	
	No unnessary feeding, no over stocking	10	
	Good Vetering Programme; / Buy good stock	11	
	Plant time / Soil preperation	12	
	Insurance; / Take advice	13	
	Farming with animals that are adapted to the climate ; / and type of Grazeing	14	
	Not to have only one enterprise; / Market	15	
	Take care of sick animals; / uliness; / medicine	16	
	Irregeting	17	
	Dogs at home	18	
	Political, economic, social changes	19	
	Training / Communication, / Trails	20	
	Cultivate pastures	21	
	Good Farming, / Look after equipment, / Livestock	22	
	Communication; / Satisfaction	23	
	Security matters	24	
K	**MARKETING**		
K. 1 - 3	No	0	
	Yes	1	
K.1	***WHY:***		
	Read the Market; / Price; / Communication	1	
	The Marketing - board concern more on commercial farmers	2	
	Not familiar with Marketing Policy	3	
	Slaughter them in my butchery	4	
	Use market; Agents; Auctions	5	
	Fantis	6	
K.2	***WHY:***		
	The use of boards to make consumers	1	
	Look for Market Price	2	
	Agri-Market consultant	3	
	Makes things easier	4	
	Not familiar	5	
K. 3	***WHY:***		
	Verbal	2	
	Hawkers	3	
	Give discount	4	
	Business men + individuals bought respectively	5	
	Good suppliers	6	
	Negotiating	7	
	Product are cheap	8	
K.4	Nowhere	0	**1994**
	Listen to advice, magazines, Public	1	179 + 180
	Auctions; / Agents	2	**2001**
	Dep. Of Agriculture; Ext. officer; Local extension; Agri-elo	3	181 + 182
	Properboer; Market consultant; Agent; Local Farmer	4	
	Vleissentraal; Wool producers association	5	
	Co operative	6	

L	**COLLABORATION WITH OTHER FARMERS**		
L. 1	No	0	
	Yes	1	
	They work together	2	
	Give advice	3	
	Meetings	4	
	Borrowing something	5	
L. 2	Nothing	0	
	In times of fire; / Fire fighter(ing); / Veld burning	1	
	Stock - theft; / Combating theft	2	
	Production matters; / Advice	3	
	Farmers association	4	
	Burning the pasture	5	
	Marketing matters; / Date of planting	6	
	Country; / City - Tsoho	7	
	Eliot ; Ugie	8	
	All areas	9	
	Thaba Nchu; / Botshabelo; / DeWetsdorp; / Hophouse	10	
	Livestock;/ Sell; Bought; / Crops	11	
	Bloemfontein	12	
	Auction information	13	
	Thechnical advicers	14	
	Ploughing; Planting; Harvesting	15	
	Ladybrand; Ficksburg; Tweespruit	16	
M	**IMPACT ON THE ENVIRONMENT**		187 - 194
M. 1	Rain; Climate; Flood; Water; Wind	1	
	Lack of knowledge; / Lack of capital	2	
	Management ; / Maintenance	3	
	Economic; / Physical (Drought); / Social (environment); / Political; / Technological	4	
	Diseases	5	
	Theft	6	
	Trading (international)	7	
	Insects; / Pest; / Illness	8	
	Diesel; / Petrol; / Transport	9	
	Inflation ; / Marketing	10	
	Wages ; / Financial assistance	11	
	Veld Fires	12	
	Over Stocking; / Prices of inputs	13	
	Labour; / Competition; / Government policies	14	
	Safety + Security	15	
	Training	16	
M . 2	None	0	195 + 197
	Rain ; Climate; Water; Floods	1	
	Lack of knowledge; / Lack of capital	2	
	Management	3	
	Physical ; / Drought; / Soil	4	
	Political; Economic; Social; Technological	5	
	Theft; / Livestock	6	
	Disease; Insects; Pest	7	
	Interest Rate high	8	
	Diesel + Petrol	9	
	Veld Fires	10	
	Labour ; / Government	11	
	All	12	
	Prices of inputs	13	
	Marketing	14	
	SARS; / Tax	15	
*	***HOW:***		196 + 198
	a Lot of animals are stolen; / Cross our borders	1	
	Killed animals	2	
	Floods; / Wind destroyed crops/fruits/irrigation	3	
	No collaboration between police and farmers	4	
	Have no knowledge of management; / Finance	5	
	Changing the situation	6	

M . 3	None	0	199 + 201
	Weather ; Drought; Fodder; Water; Floods	1	
	Management	2	
	Lack of knowledge; / Lack of land; / Lack of capital	3	
	Economic; / Price of the Products; / Interest Rates	4	
	Diesel + Petrol; / Transport	5	
	Theft	6	
	Disease	7	
	Over Stocking; / High input costs	8	
	Wages; / Financial assistance;	9	
	Veld Fires	10	
	Security; / Training	11	
	Labour	12	
	Machinery	13	
	All	14	
	Competition; Marketing	15	
	Inflation	16	
	Political	17	
	Social + Technological	18	
*	***HOW:***		200 + 202
	Border patrol; / Service not efficient; / Less control	1	
	Steal money; / Steal; / Not satisfy	2	
	Prices are low	3	
	Produce quality products	4	
	Have no training; No management; No planning	5	
	Destroyed irrigation ; Pipes; Destroyed Crops	6	
	Land redistribution program; / Slow	7	
N	**PRACTICES**		203
N. 1	Nothing	0	205
	Improving; / Security	1	207
	Breeding; / Marketing; / Production; / Competition	2	209
	Nutrition; / Inspect animals; / Crop rotation; / Soil preperation(samples)	3	211
	Wages; / Financial Management; / Low inputs; / Profit; / TAX	4	
	Labour; / Government policies	5	
	Human Resource Management; / Farm management; / Farming	6	
	Immunization	7	
	Control; / Planning; / Cultivated pastures; / Contracts	8	
	Re - investment	9	
	Officers visit farmers; / officers assistance	10	
	Workshops ; / Training	11	
	Theft	12	
	Pest Control	13	
	Transport	14	
	Livestock rotation	15	
	Meetings ; / Courses	16	
	Borrowed equipment	17	
*	***DESCRIBE:***		204
	Due to economy	1	206
	Now there are no visits; / No workshops; / No assistance; / Can't borrow anymore	2	208
	Cost less	3	210
	Did not do it before; / Do not know it before	4	212
	Now doing it	5	
O	**TRAINING**		213
O. 1	Nothing	0	215
	To work with money; - effectively; / Financial matters	1	217
	Farm Management; / Farm style; / Organic farming	2	
	Animal/Plant production; / Nutrition	3	
	Health	4	
	Labour legislation; / Labour training	5	
	Planning; / Encouragement	6	
	Training; / Computer use; / New equipment	7	
	Human Resource Management; / Properboer; / Assistance	8	
	How to use Market; / Marketing; / Purchaseing	9	
	Artificial insemination	10	
	Soil analysis skills; / Pasture Management Skills	11	
	Choice of cultivers	12	
	Storage	13	
	Planting time ; / Lactation period	14	
	Fertilizer requirements	15	
*	**MAINTENANCE AND ADMINISTRATION**		
	A separate, neat, well organised office with a well planned and functional filing system	1	223
	An administrative corner in or other room which appears well planned and functional system.	2	224
	A separate room which appears neat, (without computer with a seemingly organised filing system). Ho	3	225
	A separate room which appears untidy and chaotic serves as an office. The filing system is haphazard	4	227
	A separate administrative corner in a room which appears untidy and chaotic. The filing system is hap	5	229
	No administrative centre or system whatsoever.	6	230
	The farmer has an organized, systematic maintenance plan and all the activities are performed accord	1	231
	The farmer has no system, but he do maintenance as needed.	2	233

| No maintenance is done. | 3 | 234 |